



# World Environment Report

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## Common Market Compromises On Water Pollution Regulations

**BRUSSELS**—The European Common Market December 7th resolved a serious environmental policy rift that threatened the drive to clean up European waters when it agreed to a compromise that will allow both emission standards and water quality standards to co-exist.

This arrangement, which will still take several years to implement, was made necessary when Britain refused to accept the emission controls on harmful chemicals backed by all other eight European Economic Community (EEC) member countries, (*WER*, Nov. 10, p.2), Great Britain, which favors water quality standards rather than waste controls, vetoed the control proposals drafted by the EEC executive commission at an earlier meeting of environmental ministers October 15 and held out again at the December meeting.

The compromise will allow Britain and other countries who want to use water quality monitoring practices the opportunity to do so if they can prove that their system is effective. In the meantime the commission will draw up precise dumping restrictions for firms and authorities that line Continental waterways. This phase will be conducted over the next two years. The EEC decision-making council will then have another nine months to approve the so-called "black list" of dangerous wastes to be controlled, which will then have to be implemented over the next two years by the countries not opting for quality standards, meaning that the new regulations will not come into effect until 1980.

This hybrid plan was adopted despite private acknowledgement by British sources and American and Japanese authorities that technology is still not far enough advanced to control water pollution effectively through quality standards. There are several reasons, however, why Britain stuck to its guns in this debate. British officials maintained that being a small island nation, Britain's rivers could cleanse themselves naturally faster than continental waterways such as the Rhine, with its pollution problems. Economic factors also loomed large in the discussions as British industries, especially the chemical sector, sought to avoid limitations or additional financial burdens on their operations, while the continental EEC countries were also anxious to standardize controls throughout the EEC so that their firms would

not be put at a disadvantage vis a vis their British competitors.

Lastly, Britain's Labor Government, divided over the membership in the EEC, is always reluctant to appear to be making concessions to the rest of the EEC membership. The other countries reluctantly gave in at a late-night meeting in order to obtain a start on a clean up program for their problem waters. DAVID FOUQUET

## NATO Meeting Moves Against Oil Spill Pollution

**BRUSSELS**—The 15 countries of the North Atlantic Treaty Organization meeting here December 11 adopted resolutions pledging to continue their efforts in combatting maritime pollution, especially in the field of oil spills.

Foreign Ministers of the NATO Alliance took time out from discussion of their security-oriented agenda to approve declarations prepared by the NATO Committee on the Challenges of Modern Society, an alliance organ formed in the late 1960s at the instigation of the United States to cope with social and environmental dangers confronting the member nations.

In addition, the countries initiated what were termed major new studies on problems related to food and health. The object of this new undertaking is to identify, compare and evaluate the effectiveness of the various methods which have been used in the NATO countries to modify dietary habits in the interests of health. While the aim is to improve health standards in member countries, the results would also lead to a better utilization of global food resources.

Protection of the marine environment, a subject which has obtained considerable NATO attention, will continue to as a result of the resolutions passed in December. They

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commit the countries to develop data and mathematical models to aid in maritime environmental management. Another main aspect of the resolutions involves the pledge to combat, detect and eliminate both intentional and accidental spills while using the latest state of the art.

## Fatal Accident Fuels Anti-Nuclear Forces in Germany

**MUNICH**—A fatal accident at West Germany's first commercial nuclear reactor at Gundremmingen on the Danube on Nov. 20th has provided fresh ammunition for the country's growing anti-nuclear lobby and rekindled fears over the risks of such power plants.

Two men were killed when a jet of radioactive steam escaped, enveloping the interior of the reactor for almost 10 minutes. Six or seven other people who were working in the building fled in panic into the open air as the emergency alarm sounded. At the time some 80 to 100 persons were in the reactor area.

A spokesman for the firm that operates the reactor said that mathematical calculations showed that between 500 and 700 liters of water escaped in steam form. He denied reports that a valve in question had already been defective.

The plant was immediately closed down and an investigation begun. This was the first fatal accident recorded in any of the 10 nuclear power stations in Germany.

The German press played the accident big and stories said that a technical defect in a valve was a suspected cause. A company spokesman said that no one else in the plant, or living near it, had been endangered. But later stories reported that other employees who went to the victims' assistance were also subjected to a considerable degree of radiation.

Fear of nuclear reactors has already reached measurable proportions: A public opinion poll carried out in Gundremmingen after the accident found that one in five of the local population would leave the area if they could.

## ECE Urges Air Pollution Standards

**GENEVA**—The Economic Commission for Europe has come up with ten recommendations based on a seminar held in Washington during November to discuss control of sulphur dioxide pollution.

The seminar found that, although sulphur dioxide is recognized as a major air pollutant in Europe and North America, there are significant differences in national regulations, technological methods and administrative policies for dealing with it.

By 1973, emissions of sulphur dioxide in Europe and North America had reached 97 million tons per year. The argest single source recorded—a smelter—accounted for 1 million tons, while other major sources ranged from

130,000 to 500,000 tons. Nearly every country in the regions is engaged in desulphurizing fuels and combustion gases. In the U.S., however, desulphurization covers only about 1 per cent of the capacity of electric power stations.

The participants noted that technology for physically cleaning coal, other fuels, and flue gas desulphurization are already contributing to reduction of sulphur emissions. But advanced processes, such as coal gasification, chemical cleaning of coal, fluidized bed combustion and integrated power cycles are not yet fully developed and are unlikely to reduce sulphur emissions significantly in the near future.

The recommendations for governments are as follows:

- Establish clear goals for sulphur control regulations to provide a basis for the development of desulphurization projects.
- Establish a strategy for control of all sources, taking into account costs and energy consumption.
- Stimulate development of advanced technology.
- Encourage research on effects of sulphur compounds.
- Favor harmonized measuring techniques.
- Monitor concentrations of sulphur compounds.
- Support the ECE Working Party on Air Pollution Problems study of the distribution of sulphur compounds.
- Promote harmonized control legislation.
- Report on sulphur emissions in detail, giving quantitative data on control, costs of control, and exchanging data through the Working Party.
- Consider the publication by the Working Party of unified methodology for technical and economic estimates of the effectiveness of preventing emission of harmful substances into the atmosphere as a result of fuel use.

WILLIAM MAHONEY

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## Japanese Plan Steps To Reduce Airport Noise Problems

*TOKYO*—Twenty-eight foreign airlines serving Japan have filed suit against the government over special jet noise charges which it has imposed on aircraft landing at the country's commercial airports. The suit was filed with the Tokyo District Court in an attempt to obtain an injunction prohibiting collection of the charges. The airlines claim the Ministry of Transport abused its authority in issuing a notification on August 11, 1975 which created the new landing charge. Such a decision should not have been made under the law until after consultations with local governments and the airlines themselves, the suit charges.

It also is claimed in the suit that imposition of the special charge is a violation of international civil aviation conventions to which Japan is a party. The suit, in addition, questions the justification of charging uniform special rates according to the tonnage and noise levels of aircraft at all Japanese airports.

The airlines emphasized that roughly 76 per cent of the new revenue from the special charge has been designated for reducing jet noise near Osaka International Airport and only 4.7 per cent for such programs in the vicinity of Tokyo International Airport.

Of the 28 airlines involved in the suit, only nine are serving Osaka. The airlines do not intend to pay the special charges before the court has handed down its decision on the matter.

Meanwhile, Japan's Ministry of Transport is re-evaluating the effects on new international airports now being prepared for operations of a recent decision by the Osaka High Court on the Osaka International Airport noise dispute in favor of local residents. Ministry authorities are worried that the court decision may force them to change their basic policies on new airports over the next two years. Depending upon the results of new studies on noise pollution, it is considered likely that the planned scale of operations of the new Tokyo International Airport at Narita and the Kansai International Airport near Osaka may have to be modified.

The Osaka High Court ruled on November 27 that no flights should be permitted to arrive or depart from Osaka International Airport between 9 p.m. and 7 a.m. each day. The ruling followed a suit filed by some 300 residents of nearby cities.

However, officials of the International Air Transport Association (IATA) have requested the Ministry of Transport to exclude from the ruling those aircraft flying on global routes which meet the aircraft noise regulations of the International Civil Aviation Organization (ICAO) of the United Nations. The Japanese Government has filed a request with Osaka High Court to restrain its ruling and has announced it will appeal the case to the Supreme Court.

The Osaka court decided to permit three international

airlines to continue their 11 presently scheduled night flights per week into and out of Osaka until May. One condition was set: the Japanese Government must allow no use of airbuses and cannot agree to any increases in the number of flights at Osaka.

The ruling of the Osaka High Court, unless reversed by the Japanese Supreme Court, is expected to affect significantly various lawsuits now being fought over noise conditions at many other Japanese airports and may even involve suits filed against the nation's "bullet" express train lines.

The Osaka court assigned top priority to the environmental rights of residents in preference to the operation of a public utility. Presiding Judge Taneo Sawai accused the state of neglecting adequate countermeasures to ensure a normal life for the residents while pushing its aviation policy.

A.E. CULLISON

## Japanese Tighten Air Pollution And Wastes Regulations

*TOKYO*—Japan is tightening both its air pollution control regulations and its controls on disposal of industrial wastes.

The air pollution move is aimed at reducing emissions of sulphur and nitrogen oxides from stationary sources by 25 per cent by the end of 1980, compared with pre-1973 conditions. Reduction is to be achieved both by tightening emission tolerances and by increasing the number of plants covered by the regulations. Officials of the Environment Agency estimate that approximately \$98 million in new equipment investment will be required of the country's industry to meet the new requirements.

It is expected that the new provisions will bring to 3,000 the number of large-scale industries subject to regulation. The previous figure was only 1,000 throughout all of Japan. According to the Environment Agency, these 3,000 plants account for 60 per cent of sulphur oxide emissions.

The Agency plans to tighten industrial controls further by the end of this year and is working on automotive controls to be enforced in 1978.

As for industrial wastes, the government is revising the Industrial Waste Disposal Law and the Ocean Pollution Prevention Law primarily to reduce the health hazard of PCBs and other chlorine compounds. In effect, the revisions will require that all discarded household electric appliances containing condensers with PCBs must be burned at high temperatures before being placed in landfills or dumped in the ocean.

Meanwhile, the Living Environment Council has recommended to the Welfare Ministry that penalties for violators of industrial waste disposal regulations be instituted. There are now no clear-cut provisions. The unofficial estimate is that 90 per cent of all industrial waste in Japan is dumped without consideration of laws.



## UNEP's TOLBA: A Busy Road Ahead for 1976

**NEW YORK**—Mostafa Tolba is taking over as executive director of the United Nations Environment Programme (UNEP) at a crucial stage in the agency's development. In the words of his predecessor, Maurice Strong, UNEP is ready for a "major jump in political mandate" as the environment issue must now "move to the center of the global arena."

As Tolba himself sees it, his job is "to identify beyond doubt UNEP's role in the New Economic Order," which has become a major theme of the UN's General Assembly. "The ultimate goal of UNEP," Tolba told *World Environment Report*, "is not just to be a pollution control agency. Rather it must have a concrete role in leading the governments of the world toward the new Economic

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*With the departure of Maurice Strong from his post as executive director of the United Nations Environment Programme (UNEP), Secretary General Kurt Waldheim has named Mostafa Kamal Tolba to serve out the unexpired portion of Strong's term (Jan. 1, 1976 to December 31, 1976). Dr. Tolba has been UNEP's Deputy Executive Director. In other changes, R. Bruce Stedman, who has been Assistant Executive Director of the Environment Fund and Management since last summer will also act as Dr. Tolba's second in command. And David Munro, who is in charge of international programs for Environment Canada, is joining UNEP as a special advisor to the executive director with oversight over the agency's program as his primary responsibility.*

*Both Dr. Tolba and Mr. Stedman were in New York last month, where they were interviewed on their plans and hopes for UNEP.*

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Order. It is abundantly clear now that we need different patterns of growth that are not simply monetary but that take into account actual development processes for natural, environmental and cultural resources."

Tolba is an Egyptian microbiologist who has been Deputy Executive Director of UNEP since its inception. He was formerly President of the Egyptian Academy of Scientific Research and Technology and headed his country's delegation to the UN Conference on Human Environment in 1972. He was a Vice President of the conference. He was educated at Cairo University and received his PhD from the University of London. He has served on several UN agencies and held several senior and ministerial posts in the Egyptian government.

Looming on the immediate horizon as he takes over UNEP are three crucial events—Barcelona Two, the February meeting at which UNEP hopes governments of the Mediterranean will initial a broad convention toward cleaning up that sea; UNEP's Fourth Governing Council meeting in March; and Habitat, the May meeting in Vancouver that will chart the future course for UN agencies, including UNEP, in the area of human habitation.

**Governing Council**—Tolba sees five main issues to be addressed when UNEP's Governing Council holds its fourth annual meeting in Nairobi beginning at the end of March.

The first is the question of shared natural resources, an issue left over from last year. UNEP plans to produce this month a set of proposed guidelines that will sort out the political issues from the purely environmental and scientific problems involved in shared river basins, shared airsheds and travelling acid rain. Tolba anticipates a "profound discussion" by the Governing Council leading to a final set of recommendations that next year's Governing Council can either refer to the General Assembly or develop into a convention on shared resources.

The second major issue is the question of environment versus development, which last year's council asked for as a separate item this year. Again, Tolba anticipates a "profound discussion" of how to have sustained growth while avoiding any harmful effects to the environment.

Thirdly, the question of irrational and wasteful use of natural resources is to be addressed. UNEP will attempt to define general criteria to determine whether a natural resource is being used rationally, Tolba said, and if the governments agree to the criteria, UNEP will apply them to three specific areas: soil, water and energy.

"In my view," Tolba said, "soil is used very irrationally in the developing world because of the pressure for food—unsuitable land is used for agriculture. This is less the case in the developed countries, but, on the other hand, energy is misused most in the developed countries. Water is equally misused in the developed and undeveloped countries."

The fourth issue that Tolba expects to be hotly discussed in Nairobi is the one of institutional arrangements. The General Assembly resolution establishing UNEP in 1972 called for a review of the agency's structure after four years. Therefore this year's Governing Council must discuss the structure of the council itself, the UNEP secretariat, the Environment Fund and the Environment Coordination Board, which includes other UN agencies. UNEP has asked the governments for their views and will present its analysis at an informal meeting this month in preparation for the Governing Council. Tolba believes there are no drastic changes required in UNEP's structure



and that whatever is needed can be done within the existing institutional arrangements. All of this must be done with the realization that the UN General Assembly is looking into restructuring the United Nations as a whole. Tolba believes the Governing Council should put forth what it would like the General Assembly to keep in mind as basic principles relating to the environment program during this restructuring.

The issue is complicated by the Habitat conference in Vancouver, British Columbia, shortly after UNEP's Governing Council meeting. UNEP already incorporates the Human Settlements Foundation, Tolba pointed out, and has a section that deals with the issue in general. But the Habitat Secretariat is preparing a paper on what ongoing institutional arrangements the UN should make in the human settlements area following the Vancouver conference. The issue is complex and difficult, Tolba said, and it is premature for UNEP to take a stand.

The final major issue for the Governing Council, Tolba said, is the Human Settlements Foundation itself, and how it is to be funded. There are so far no contributions to the foundation beyond the initial \$4 million from the Environment Fund.

**Regional Seas**—A good start has been made since last year's Barcelona 1 meeting on research and monitoring activities in the Mediterranean, Tolba told *WER*. And UNEP has identified some of the important centers in the region that will be focal points for the seven research and monitoring activities agreed upon (*WER*, Feb. 3, 17, 1975). Now the agency is developing the "Blue Plan" which will set forth a study of the integrated development of the area, and Tolba hopes to have it in the hands of governmental experts for review early this month. After further input during Barcelona 2, he hopes to have this plan in final form for approval and implementation. UNEP wants a complete survey of what is happening in the Mediterranean area to project a set of integrated activities that will ensure development continues without depleting the region's resources or polluting the sea.

As for Barcelona 2, the convention and its protocols are virtually ready and Tolba hopes what problems remain can be ironed out so that the governments will initial the documents at Barcelona 2. The problems that remain reflect the political difficulties of the Mediterranean basin. Tolba concedes the political hurdles are high, but points out that they were overcome at Barcelona 1.

"My own feeling," he said, "is that if we succeed in the Mediterranean with all of its hot spots, we are likely to proceed on much better ground in other areas of the world."

UNEP's success with the Mediterranean has led it into considering other "regional seas." For example, Tolba told *WER*, the agency is working in the Caribbean and hopes to have some action to present to the Governing Council in March. What is needed, he believes, is an examination of how things are going in the Caribbean with respect to industrial development, tourism, air

pollution, water pollution and how they interact. If such a program can be presented to the governments of the region, Tolba hopes they will then agree to an integrated plan for development that will prevent environmental deterioration. In the Caribbean, however, he points out, more exposure of what the problems actually are is needed than was the case in the Mediterranean before legal instruments can be developed.

The Persian/Arabian Gulf is another area of concern. There have been discussions of the need for a convention to protect the gulf, but action has been delayed because of political differences, one of which is over the question of what to call the gulf. Kuwait has played host to the meetings so far, and there has been agreement on a reasonably sized group of experts to survey the gulf and the pollution situation, Tolba said.

As an outgrowth of the Mediterranean action last year, the Arab League for Education, Science and Culture decided to call a series of meetings to initiate similar action on the Red Sea. The series began with Jidda 1 last year and will continue with Jidda 2 this month. UNEP has provided expert advice to the league.

Another area that requires attention is the sea off the west coast of Africa. Tolba said the need to control pollution in those waters is very clear but that more data must be collected before a Mediterranean-style program can be started.

**Industry Seminars**—Another project, besides the Mediterranean, that has been a significant success for UNEP, Tolba believes, is its program of industry seminars. First of these, on the pulp and paper industry, was held in Paris last March (*WER*, May 26, 1975, p.3) and the second, on the aluminum industry, was held in October, (*WER*, Oct. 27, p.2). The first was not as effective as it should have been Tolba said, but the experience gained helped make the aluminum meeting a success. The key point learned, he added, is that full preparation is required before the seminars are held. Next on the list is the automobile industry, now scheduled for October, and the next after that may be the agriculture-based industry.

The seminars are not an end in themselves, Tolba said, but should produce a set of guidelines for the industries in question and for governments to use in dealing with these industries. Then UNEP must follow up on the recommendations.

**Environment Fund**—Another UNEP activity reaching a critical stage is the Environment Fund. The Fund is operating in the latter half of its initial five-year pledge period of 1972-77, and the end is in sight. Tolba would like to get the views of the Governing Council governments on the level of funding they will support beyond 1977.

R. Bruce Stedman, who now heads the Fund operations, told *WER* that it is marginally oversubscribed beyond its \$100 million target for the initial five years. During the first couple of years, he said, the Fund was



## Some Fund Projects . . .

Here are typical examples from the more than 100 projects approved under the Environment Fund during 1975.

**Human Settlements:** An ecological study of a large urban conglomeration (Hong Kong)—a \$172,000 UNESCO project of which the Fund is contributing \$62,000.

And, assistance to the Capital Development Authority of Dodoma, Tanzania—a \$10,444,000 multi-agency project of which the Fund is contributing \$399,000.

**Environmental Health:** Evaluation of toxicity of environmental chemicals—a \$101,000 WHO project of which the Fund is contributing \$46,000.

And, the International Register of Potentially Toxic Chemicals (IRPTC)—an internal UNEP project funded at \$214,000 through November this year.

**Pest Management:** A global program for development and application of integrated pest control in agriculture—a joint \$221,000 project with FAO, of which the Fund is contributing \$135,000.

**Training and Education:** An environmental teaching manual for workers' educators—a \$72,500 ILO project of which the Fund is contributing \$48,000.

And, a \$4 million UNESCO international program in environmental education of which the Fund is contributing \$2 million.

**Information:** World Environment Day—a \$500,000 internal UNEP project.

And, a series of mass media training seminars—a \$165,000 internal UNEP project.

**Technology:** Study of the transfer of technology and inter-related environmental problems—a \$778,000 UNCTAD project of which the Fund is contributing \$457,000.

**Industries:** Development of an on-going consultative relationship with specific industries—a \$725,000 internal UNEP project.

**Regional Activities:** A series of projects related to the Mediterranean—implementation of the Barcelona action plan, promotion of marine parks, assessment of industrial pollution from North Africa, a protocol on land-based pollution—multi-agency involvement totalling \$1,796,000, of which the Fund is contributing \$1,762,000.

**Arid Lands:** Study of the environmental implications of irrigation and development of guidelines—a \$184,000 UNESCO project of which the Fund is contributing \$112,000.

**Tropical Forests:** A pilot project on monitoring tropical forest cover—a \$1,058,000 FAO project of which the Fund is contributing \$557,000.

**National Parks and Reserves:** A program strategy for ecosystem conservation, promotion and coordinated action—a \$3,099,000 IUCN project of which the Fund is contributing \$1,555,000.

**Soils:** World assessment of soil degradation (Phase I)—a \$1,005,000 FAO/UNESCO project of which the Fund is contributing \$542,000.

**Other:** A study of new forms of international cooperation with the Brookings Institution—a \$179,000 project of which the Fund is contributing \$43,000.

criticized for its slowness in making commitments and expenditures and for its high proportion of overhead costs. But, he pointed out, this criticism was unjustified because UNEP is not intended to be a funding agency, and the Fund is merely a source of seed money, or leverage, in support of the over-all environment program. Secondly, he said, one must start slowly in a discrete program of this sort. In 1974, the Fund spent a little over \$4 million; in 1975, it spent close to \$10 million; in 1976 he expects it to reach \$30 million. Thus, the pace of expenditure is quickening, and UNEP will present to the Governing Council in March a program for adjusting the allocations over the years to reflect this.

The other side of the coin, Stedman said, is that the pace of payments into the Fund against pledges has been slow. Some of the big contributors have felt they should pay only as UNEP needed the money and have been waiting for evidence of this need. Canada, for example, pledged \$7.5 million over the five-year period, but, after paying \$1 million in 1973, has contributed nothing since. The U.S. pledged \$40 million, but has so far paid only \$8.2 million.

Stedman is concerned because the lag time on the expenditure side of the Fund is rapidly disappearing. He intends to present "plenty of evidence" at an informal meeting with governments this month that the Fund "is in high gear" and needs their pledges.

Another source of worry to Stedman is the current difficulty the UN Development Program is having in raising money. And he is concerned because a number of countries have not yet even made pledges to the Environment Fund.

"We plan a campaign to acquaint governments with what we are doing and the rate we are doing it," he told *WER*, "with a view toward getting governments that have contributed to increase their schedules of payment and to get those governments that have not contributed in a position to do so." Stedman cites the Mediterranean program and the industry seminars as substantive projects that demonstrate the Fund's worth.

One problem with the Fund, Stedman pointed out, is the question of liquidity because of the non-convertible currencies of some of its pledges. The Soviet Union has pledged \$10.7 million to the Fund, of which only 25 per cent is convertible, the balance being in rubles. This represents the largest proportion of the nonconvertible funds. UNEP has begun discussions with the Soviets on the problem, and Stedman said their "first reaction has been positive." He is anxious to "work out with the Soviets ways to mobilize their considerable talents and experience for the benefit of the Fund and the developing countries in a way that will respond to the priorities the governments have set for us."

Stedman, who is the highest ranking U.S. citizen at UNEP, joined the agency in September of 1975 as Assistant Executive director for the Environment Fund and Management. He has been with the UN for over 29 years.

JRM



## Briefs . . .

### Geothermal Energy Seen as Alternate Source for Britain

Considerable interest is being shown in the possibility of exploiting geothermal energy from hot, dry rocks in the British Isles, particularly in Cornwall. The proposal came in a paper presented last month by Dr. Keith Dawson, head of the Energy Technology Support Unit at Harwell, assessing alternative energy sources for the United Kingdom. The unit is a government body performing research and providing information for the Department of Energy.

Dr. Dawson concluded that, with an equivalent amount of investment to all other energy sources, solar, geothermal, wind, tide and wave power could together provide 6 to 8 per cent of over-all energy demand 25 years hence. This presumes that demand will continue in the historical trend, bringing about an energy gap by the year 2000 and making the use of nuclear power more likely. However, he pointed out that new research into methods of energy conservation could alter the proportional contribution from alternative, renewable sources.

### Greater Effort Called for In Rumanian Recycle Program

Radio Bucharest scolded Rumanians last month for not paying attention to decrees demanding greater recycling of waste paper, for which many collection agencies have already been organized. The radio said waste paper should be returned to Rumanian cellulose factories where it can be recycled into usable paper, but it noted that, in spite of repeated appeals in the media, paper continues to be thrown away or burned.

A joint session of the Rumanian Communist Party's political execu-

tive committee, the state council and the government in August decided that action should be taken to ensure efficient collection and re-utilization of all waste and other secondary materials. The bodies decided that all "economic units" should adopt concrete measures to guarantee efficient processing of such materials by each factory, section, workshop and individual employee.

They decreed that all citizens should deliver to the collecting agencies all used materials and items no longer needed by their households and should deposit litter at specified points. They also decreed that all party bodies and organizations, the Union of Communist Youth, and all other mass and public organizations should instill in youth and all citizens a respect for thrift and recognition of the need to combat waste.

### Mexico City To Seize Vehicles In Anti-Noise Campaign

Half of the more than one million vehicles in Mexico City produce excessive noise. Tests on 1,343 vehicles—with an 85-decibel acceptable limit for motorcycles and a 90-decibel limit for all other vehicles—found that 20 per cent of the cars, 50 per cent of the city buses, 84 per cent of the motorcycles and 90 per cent of the suburban buses and diesel trucks were too noisy. Three separate readings were taken on each vehicle, with a decibel variation no greater than three permitted between the readings.

The testing was done as part of a campaign to eliminate what Mayor Octavio Senties called "one of the principal sources of atmospheric contamination" in the Mexican capital. The campaign involves eventual seizure and removal from the streets of offending vehicles after their operators have been warned.

After January 6, 35 teams of noise-inspector police will begin checking vehicles. Those exceeding the limits will be stopped and their operators given a traffic citation. One of the two license plates will be removed from the vehicle, and the operator will

have 30 days in which to have it repaired and to reclaim the license plate. If the 30-day limit is exceeded, the operator will be fined \$8 and his vehicle will be removed from circulation by the police until it is adjusted.

### World Bank Will Aid Huge Pakistan Urban Scheme

The World Bank is expected to sign an agreement by next April to provide \$10 million towards Pakistan's Lyari program for slum clearance, environmental improvement and urban renewal in Karachi. By its scheduled completion in 1981, the scheme is expected to benefit 600,000 people. A bank appraisal team has just ended a visit to Pakistan and will submit a detailed report to the International Bank for Reconstruction and Development.

Prepared jointly by the Karachi Municipal Corporation and the UN Development Program, the Lyari program covers sewerage, sanitation, health care, education, recreation, workshops, a "new area survey" and a financial management study.

### British Physicist Urges Caution on Fast Breeder Reactor

One of Britain's most distinguished physicists Sir Brian Flowers, F.R.S. has asked the government to postpone any decision on the construction of a fast breeder reactor power station in the United Kingdom as part of a European program. Sir Brian is chairman of the Royal Commission on Environmental Pollution, which is preparing a report on radiological safety with particular reference to an expanded British nuclear power program.

In a letter to Prime Minister Wilson, published last month, Sir Brian asked that, if a decision cannot be deferred until publication of the commission's report, their views should be noted. He drew attention



to the unresolved problems of fast breeder stations, in particular the stability of the reactor itself and management of the radioactive wastes. He also pointed out the environmental and security hazards.

Conceding that a demonstration station would be necessary to continue research and to gain operating experience, Sir Brian is nevertheless concerned that the vast resources of money and technology used for its construction should not automatically lead to its further commercial use, nor make the ultimate choice of a whole fast breeder program seem "inevitable."

"We are concerned," he wrote, "that such a venture might deflect this country from the search for alternative long-term sources of energy, whose potential environmental hazards might be far less than those of a FBR programme, and from the implementation of a vigorous policy of energy conservation."

The Prime Minister has replied that no early decision is anticipated but that the commission's views will be borne in mind.

### Water Supply for Hyderabad

The government of Pakistan's Sind province is undertaking a \$45 million project to establish a water supply and sewerage system for Hyderabad, which, with a population of 2.2 million, is Pakistan's third largest city. The project is expected to take two years to complete.

### Moscow Tests Electric Buses

In a move to avoid the traffic tangles and air pollution that plague western cities, Moscow is testing electric vehicles. According to Tass, the Soviet press agency, the ten test vehicles have a top speed of 70 km per hour and can accelerate to 40 km per hour in 12 seconds. The vehicles are converted minibuses that are made at the Ulyanovsk automobile plant.

They are being used to carry freight to shops, schools, kindergartens and laundries, according to Tass.

The agency reports that specialists from the Electromechanics Research Institute adapted the vehicles using a motor powered by storage batteries with special transformers working on alternating current. The batteries must be recharged every 60 to 70 km. This is done from the 220-380 volt industrial power network of Moscow. The time required to load or unload the vehicles is used for recharging.

### Computer System Will Monitor And Control Pollution in Japan

A system that will monitor, predict and control air quality simultaneously is under study at the Kashima coastal industrial zone in Ibaraki prefecture—one of Japan's largest industrial complexes. The new system will have 182 instruments attached to 22 sources of air pollutants measuring volume density and temperature of flue gases. Another 108 monitoring instruments installed around the zone will measure ambient sulfur and nitrogen oxides, as well as meteorological conditions. The data will be fed into a computer, which will predict conditions.

### The Effect of Gamma Rays On Winter Queen Begonias

Scientists at Tokyo's Metropolitan Isotope Research Center say they have developed a begonia plant that gives smog warnings. When the plant is exposed to smog, the scientists say, it develops white spots on the green parts of its leaves, which eventually turn to blisters. Propagation of the plant has been carried out for four years, and the scientists are confident the new species will be a cheap and effective way for giving smog alerts. The new begonia, called "Winter Queen Gamma No.3," was developed by irradiating the Winter Queen variety with cobalt 60 gamma rays.

### Pakistan Flood Control

The Pakistan government has prepared a \$418 million flood control program to be completed by 1980-81. In the first phase, \$159 million is to be provided by the provinces, of which \$52 million will be spent by the end of this year. To provide better flood warning, the government is studying a plan to install weather radar and satellite stations to predict rainfall.

The flood control plan also includes complete harnessing of the country's river systems. The cost is broken down as \$86 million for Punjab; \$310 million for Sind; \$12.8 million for the Northwest Frontier; \$9.5 million for Baluchistan.

### Heavier Fines Proposed for Hong Kong Harbor Spills

Ships found polluting Hong Kong waters are likely to be paying heavier fines in the near future. Proposals by the government's Sub-Committee on Oil Pollution of the Port Executive Committee (SCOOP), say that tougher laws, like those in Britain, should also apply to Hong Kong waters. The subcommittee also wants the principle of liability to be clearly established in future pollution laws and to be subject to international convention.

### Swiss Move To Protect Snails

Swiss authorities in the canton of Valais warned last month that poachers caught collecting the area's succulent snail over the next three years will be subject to fine or arrest. Police have been given power to search bags and cars if there are indications someone has been gathering snails. The creatures are threatened with extinction in the Valais region, where they are an esteemed delicacy. Neuchatel took equally stringent measures five years ago.





# World Environment Report

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## Wildlife Fund Urges Action By Common Market Nations

*MORGES, Switzerland*—The World Wildlife Fund, through Prince Bernhardt of the Netherlands, its president, has appealed to the European Common Market nations to implement without delay the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Only 22 nations have so far implemented the convention, which came into force last July 1, not including any of the EEC countries. "With each day's delay in accession to the Convention by the countries of the EEC," the Prince declared, "many species are drawing nearer to extinction and the world is becoming that much poorer."

The Convention establishes a permit system to govern trade in 370 threatened species. No live or dead specimens are allowed to be moved unless both exporting and importing states have certified the transfer will not be detrimental to survival, that the specimen was not taken in violation of law, nor for commercial purposes. Leopard, cheetah, jaguar, most other spotted cats are protected, as are the gorilla, orangutan and five of the great whales.

Countries acceding so far are Brazil, Canada, Chile, Costa Rica, Cyprus, Ecuador, East Germany, Ghana, Madagascar, Mauritius, Morocco, Nepal, Niger, Nigeria, Peru, South Africa, Sweden, Switzerland, Tunisia, United Arab Emirates, the U.S. and Uruguay. The Fund for Animals has criticized delays in implementation by the U.S. Department of the Interior.

## Scientists Praise West German Nuclear Waste Disposal Mine

*BONN, West Germany*—West Germany has developed one of the most effective methods for atomic waste disposal in the world, according to 50 scientists from 17 countries who met last month in Clausthal-Zellerfeld in lower Saxony under the auspices of the Organization for Economic Cooperation and Development (OECD).

According to the meeting's conclusions, "the only completely safe atomic waste dump in the world for medium qualities has been developed in the former salt mine at Asse near Wolfenbuttel."

The U.S. is reported to be interested in the German

method, while Sweden and Italy are following the example too. Swedish experts are experimenting with disposal in granite layers, while the Italians are depositing waste in layers of clay.

On the strength of the success at Asse, the Federal Ministry of Research and Technology is seeking the best of several other locations in the 200 million year old salt deposits, and is also planning a fuel reprocessing plant alongside the existing mine. Scheduled for operation in 1985, the reprocessing plant will produce for the first time in West Germany large quantities of highly radioactive waste, which will be transported directly into the dump. About 10,000 cubic meters of low and medium active waste will be produced in 1985, and 150 cubic meters of more highly concentrated waste. The central disposal plant will cost about \$2.5 billion, of which \$1.5 billion will be spent on the reprocessing plant.

Since 1967, 60,000 barrels of medium intensity waste and 600 barrels of concentrated waste have been deposited in the Asse mine, which is in Lower Saxony, at a depth of 500 to 750 meters. The waste is packed in barrels and stored in old mine shafts. Several shafts have already been filled and sealed.

The Asse mine is large enough to handle all the atomic waste which will be produced in West Germany for the next "few years," according to the ministry.

So far, a satisfactory solution to the problem of storing high intensity waste has not been found. High intensity waste, essentially concentrated fission products from reprocessing irradiated nuclear fuel, will probably be melted into glass blocks, sealed in steel containers and buried in deep blast holes.

Summing up the conference, scientists said that storing radioactive waste in salt deposits deep underground is the best solution to the problem in West Germany. It was pointed out that geologists predict no earthquakes for the area "for several hundred of thousands of years."

JOHN BRADLEY

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## Wisdom of Closing Pan American Highway Gap Is Questioned

**BOGOTA**—The Colombian government is having second thoughts about completing the Pan American Highway in the rain forests of the Darien Gap. Although Colombian ecologists have repeatedly warned that the road would destroy the natural balance of an important jungle reserve, only recently have newspapers and other opinion makers shown concern for the area and its 90,000 nomad Indians.

Thanks largely to the publicity generated by a successful court action by four U.S. conservation groups, public opinion has focused on the ecological dangers inherent in the U.S.-financed project to connect Panama and the South American mainland through a 266-mi. jungle road.

An 87-year-old hemisphere dream to link Alaska with Tierra del Fuego, the Pan American Highway was finished in 1963 except for the Darien section. In 1971 Washington signed an agreement with Panama and Colombia to finance two-thirds of the \$150 million necessary to complete the last gap in time for the U.S. bicentennial. (Revised estimates have since swollen the road's cost to \$251 million.)

Construction had already started on the Panamanian side when U.S. officials belatedly realized that the road would carry foot-and-mouth disease north as well as tourists south. Till now, the Darien's swamps and impenetrable jungles have served as a natural barrier against the disease's spread from South America to Central America and the United States.

Construction schedules were hastily revised, and the emphasis in U.S. aid shifted from road building to the eradication of foot-and-mouth disease in the northwestern departments (states) of Colombia. U.S. officials privately admitted that there would be no money for Colombia's 62-mi. portion of the road, which must cross the Darien's worst terrain, until "clean" zones could be established in Colombia to prevent the disease's northward spread. (So infectious is foot-and-mouth that it can be carried from one country to another by a bird, a dog, even the soles of a person's shoes.)

In the two years since the eradication program began, a team of specialists from the Colombian Agriculture and Livestock Institute, the Colombian wildlife service, Inderena, and the U.S. Department of Agriculture have succeeded in stemming the disease in the frontier department of Choco, where not a single case of foot-and-mouth has appeared since February, 1974.

Financed by a \$7.8 million grant from the Department of Agriculture, the five-year program covers 4,500 ranches with 300,000 head of cattle and also will finance Los Katios national park in the Darien.

Once the frontier project is completed, eradication programs will be extended south and east to cover all of Colombia, which currently loses \$12.5 million annually on diseased cattle.

Although feasibility studies for the Colombian side of

the road have been contracted, it is now doubtful whether it will ever be built, regardless of the eradication of foot-and-mouth disease.

The Sierra Club, the National Audubon Society, Friends of the Earth and the International Association of Commissioners of Hunting, Fishing and Conservation have brought a successful suit against the U.S. Secretary of Transport and the director of the Federal Highway Administration for ignoring the 1969 law stipulating adequate environment studies for U.S. public works even though the Darien is located in foreign territory.

Washington's federal court has ordered the suspension of U.S. aid for the construction of the Darien link on the basis that the road project was not adequately studied by U.S. public environment agencies, that it threatens the U.S. cattle industry with potential losses of \$10 billion through the spread of foot-and-mouth disease and that it does not consider alternate routes, such as a ferry service connecting Panama and Colombia by water.

Instead of taking umbrage at the U.S. court's decision, Colombians now argue that completion of the road would destroy a valuable jungle reserve and the Kuna and Choco Indian tribes that live there.

"Communication by water seems infinitely preferable to the destruction of jungles with the inevitable loss of territory by Indian tribes as has happened in the Brazilian Amazon with disastrous human results," editorialized Bogota's *El Espectador*, largest daily in Colombia.

U.S. conservationists' argument that it would be cheaper, quicker and ecologically sounder to pave the 238-mi Turbo-Medellin portion of the Pan American Highway running south from the Darien Gap also is gaining support, not only because it would save the jungles but also because it would contribute to the development of an already populated region lacking adequate road communications. PENNY LERNOUX

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## The Energy Aftermath: Developing Nations Struggle To Recoup

The dramatic increase in the price of petroleum over the past two years has had a major impact on the economies of most countries, with the most severe disruptions falling on the developing nations. Some countries that have their own energy resources have experienced a bonanza of sorts, while others have had to scrounge for means of saving energy or alternate sources for it. In either case, the changes have had an impact on the environment—either positive, through reduced energy consumption and the resultant reduced emissions, or negative through increased exploitation of domestic fossil fuel deposits or construction of nuclear power plants. Following is a selection of reports by *WER's* correspondents:

**Mexico Benefits**—Mexico is reaping both immediate and long-term benefits from the oil price escalation. On the one hand, exploration for oil and gas was spurred to the extent that Mexico changed from an oil importer to an exporter within just a few months. For the future, the country is actively developing its alternate sources of energy—solar, nuclear, hydro and geothermal.

But many environmental problems remain. In the rush to become self-sufficient, air and water contamination become a minor consideration.

Ninety per cent of Mexico's energy supply is from hydrocarbons and, since 1938, the government has controlled the industry through *Petroleos Mexicanos* (*Pemex*). In 1973, Mexico imported almost 23 million barrels of crude oil. In 1974, this dropped to 6.4 million. By 1975, domestic crude needs—600,000 barrels per day—had been met and exceeded by national production. Current production is above 800,000 barrels daily, exploration is underway in 23 of the 31 Mexican states, an oil-independent future seems secure.

But development of other energy sources continues. The country's first nuclear plant, 650 MW, should start up in 1978, and exploration for uranium is underway in several states to boost the known reserves of 6,000 tons. The ninth largest hydroelectric plant in the world is taking shape on the Grijalva River in southeast Chiapas. Powered by 10 Russian-built turbines, its output will be 3 million kw. Near the U.S. border, the Cerro Prieto geothermal station is producing 75,000 kw from underground steam, with an expected eventual capacity of 250,000 kw. In several northern desert states, small solar-powered water pumping stations are bringing 30,000 to 40,000 liters of groundwater per day to tiny isolated villages.

**Colombia Program**—Colombia is engaged in a crash program to develop alternate sources of energy, particularly coal, natural gas and hydro power. The country has a growing petroleum deficit (estimated at 17,500 barrels per day this year) and no new oil fields.

Colombia has two-thirds of known Latin American coal reserves but has only pushed plans to exploit them in the last two years. The semi-autonomous Institute of Industrial Development is about to sign a contract with Peabody Coal Co. to develop part of the rich north-eastern El Cerrejon fields, and the state oil enterprise, *Ecopetrol*, and the Regional Atlantic Electrical Corporation will exploit other parts. A coal port is under construction near the Caribbean city of Santa Marta, from where the railroad will be extended south to fields in central Colombia. These coking coals will be mixed with *Cerrejon's* production. The government intends to impose strict environmental controls in any contract with a foreign company.

*Ecopetrol* is also working with Texas Petroleum to exploit the natural gas fields near El Cerrejon, with construction to begin on a 160-mile gas line to supply 200 million cu. ft. per day to the principal coastal cities of Barranquilla and Cartagena. Under study is a petrochemical complex to be built either on an island off Barranquilla or on ships anchored off the coast. Due to the coast's desperate energy situation, the government is less interested in environment controls than in bringing the gas fields on stream as quickly as possible (target 1980).

In contrast, hydroelectric schemes are being designed to improve the environment. The 1,000-MW *Saldana* project in central Colombia will irrigate 100,000 acres in addition to boosting the country's power supply by 30 per cent.

The government asked Colombians to restrict their petroleum consumption voluntarily. But this did not work, and the Mines and Energy Ministry has imposed a new system of creeping price hikes (at 15¢ per gallon, Colombian gasoline is still the cheapest in Latin America) and is encouraging the use of diesel engines. General Motors is planning a diesel engine plant in Colombia to supply the six-nation Andean Group. Pollution control is not a factor in the switch to diesels. There are no emission controls in Colombia and no likelihood of them being imposed in the near future.

**Brazilian Changes**—The spiralling cost of oil has brought economic, social and even political change to Brazil, a country that imports 80 per cent of its petroleum. The bill in 1975 was a staggering \$3.5 billion, twice that of two years ago, and was a serious setback to many plans for development.

The government ended its subsidy of gasoline as a short-term effort to cut down imports. Gasoline prices in Brazil—\$1.43 for a gallon of regular—are now among the highest in the world, and consumption was reported to be down by 20 per cent in October and November. This has had serious repercussions on the car industry, the backbone of Brazil's heavy industry and beneficiary of



many government incentives. Production and sales are also down and big layoffs are expected.

Another unpopular move taken by the government was the breaking of the petroleum exploration monopoly, opening up the country to foreign oil companies. Meanwhile, the state oil monopoly, Petrobras, is doubling its investment in exploration and production.

The government is also pushing a scheme to add a 15 to 20 per cent mix of alcohol to gasoline. The alcohol is to be made from Brazil's plentiful sugar cane and manioc. Hopes are to introduce some alcohol to gasoline this year, but critics point out that this is a new and untried method that also requires a backup network of so-far unbuilt distilleries.

Even tiny Uruguay is hurting from the oil crisis and has broken its 34-year state oil monopoly to allow Chevron to prospect for offshore oil, and has called in the Argentine state oil company to search inland. On the other hand, Bolivia is profiting from its oil, as a brisk contraband trade in gasoline has developed along the Brazilian border because Bolivian gasoline is much cheaper. Ecuador is getting some income from oil exports and has great expectations for future production.

Neighboring Peru had great hopes for its Amazon oil deposits, but exploration results were disappointing last year. Argentina is already self-sufficient in oil, but production dropped last year and exploration is hindered by the uncertain political future. The price of gasoline and oil tripled last year, as part of the general 300 per cent Argentine inflation rate, and this resulted in a temporary drop in demand for higher grade fuels. Auto prices have quintupled since April, 1974, causing a ten-fold drop in sales.

Argentina is also turning to nuclear power for the future and is exploiting its own uranium deposits. The National Commission of Atomic Energy predicts that output from its mine in Mendoza province, scheduled to begin in 1979, will be enough uranium to fuel six 600-MW reactors for 20 years.

**India Hit Hard**—"India is the worst-hit among the developing nations by the oil price hike, and we will continue to reel under its weight until the early '80's when we hope to attain self-sufficiency in oil," a top official of the Oil and Natural Gas Ministry told *World Environment Report*.

India now produces only 8.2 million tons of oil per year and imports about 15 million tons, he added, which means a foreign exchange drain of about \$1.7 billion.

Government economy measures resulted in significant savings—25 per cent in gasoline, 22 per cent in lubricants, 10 per cent in heating oil—in 1975, the official said, but the burden is still intense.

Gasoline costs \$2.20 a gallon in India, and there has been a great slump in car sales, in favor of bicycle and scooter sales. Ox carts are being fitted with reflectors and pressed into service hauling goods along main roads.

There are mitigating factors in India. For one thing, the whole country has less cars than New York City alone, and gasoline consumption is only 1/50th that of

Belgium. Central heating is uncommon. And India has received help from oil producers, notably Iran, in the form of loans, deferred payments or barter.

For the future, India is pinning its hopes on intensive exploration for both onshore and offshore oil, with the help of many western countries, as well as the Soviet Union.

As an alternative, India is turning to its coal resources and is looking ahead to solar energy (see story on p.5) and nuclear power.

Bangladesh, which had been limping toward economic recovery following its destructive war, was also hard hit by the price increase. The oil import bill jumped from \$40 million per year to \$108 million in 1974. In 1975, it was higher still, but Bangladesh also has received sympathetic treatment from oil exporters.

The Bangladesh government has also embarked on a crash program to find oil and other energy resources. Contracts were hurriedly signed with five international oil companies, including two U.S. and one Canadian, to explore the continental shelf. Production of previously discovered natural gas was increased for use in Dacca and nearby industrial centers.

Oil experts have predicted that oil will be found in Bangladesh, and the proven gas reserve of 9 trillion cubic feet is expected to increase to 22 trillion as more gas is found in the areas bordering India.

The government is also pushing experiments on recovering nuclear minerals from sands in Cox's Bazar south of Chittagong for use in a nuclear power station proposed for 1980.

Although the government has imposed restrictions limiting the use of gasoline for cars to six days a week, consumption continues to rise, as Dacca changes from a sleepy provincial town to a national capital.

In Sri Lanka, the state-owned Ceylon Petroleum Corp. doubled and then trebled prices following the OPEC rise. Consumption fell by 40 per cent and has now levelled off at a 25 per cent drop. The country's food production effort which had top priority has suffered a sharp reversal as farmers find they cannot afford the fertilizers whose costs have skyrocketed. A program to substitute organic compost has made little progress.

The tea industry switched from oil to firewood for its driers, but firewood prices have also increased, indicating a depletion of that resource. Environmentalists have been vocal about widespread jungle clearing.

The use of bullock carts for internal transport on many rubber and coconut estates has increased, but there does not appear to have been a significant shift away from trucks in the cities.

Sri Lanka has no emission controls for vehicles and visitors are appalled by the fumes from Colombo's buses, many of them relics from London Transport, imported to die there. Nevertheless, air pollution levels are not considered significant in Sri Lanka and have not dropped appreciably in the wake of the oil crisis.

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## India Launches a Big Push for Solar Energy Development

**NEW DELHI**—Despite high costs, India is determined to go ahead with the development of solar energy. Prime Minister Indira Gandhi last month told the silver jubilee celebration of the National Physics Laboratory that the scientists should give top priority to solar energy development and pledged full government support.

India will host an international solar energy conference in December, 1977, and is anxious to demonstrate that its solar capabilities are at the forefront of the developing countries.

Several Indian institutes and government agencies are working on solar energy, and an all-India solar energy working group has been formed. The group is preparing a solar energy map to identify the most promising areas for development (on average, the sun shines in most parts of India for at least 300 days per year), and is also identifying the most promising systems for field trials.

A spokesman for the Science and Technology Ministry which has established Central Electronics Limited (CEL) to produce solar panels for rural use, told *World Environment Report* that the Punjab state, India's most prosperous, would probably take the lead in solar development.

The College of Agriculture Engineering at Ludhiana is developing systems to enable Punjabi farmers to use solar energy for running refrigeration systems, for pumping water and for supplying power to their gobar (cow-dung) gas plants during the winter. An all-India solar energy conference was held at Ludhiana in November to discuss applications in agriculture.

Dr. R.L. Dutta, chairman of the working group, told the conference that solar energy could be used to convert agricultural wastes into transportable fuel. Even in big cities, he said, solar energy could play an important part in mini power plants, space heating, cooling, refrigeration and photovoltaic conversion.

Among the systems slated for field trial by the working group are pumps running on high pressure steam produced by solar concentrators, and smaller units, in the fractional to 5 horsepower range, running on organic vapors to supply power for small industries, irrigation systems, refrigeration and air conditioning.

The Central Salt and Marine Chemicals Research Institute is experimenting with solar energy to produce drinking water from brackish water and has constructed a solar still producing 100 litres per day.

Another group of scientists at the Bhavnagar Institute in Central India has developed a solar process for producing a rich potash fertilizer from sea bittern. They calculate that the 30 major salt works in India could produce 50,000 tons of this fertilizer per year.

At the high altitudes of Ladakh in Kashmir, scientists have designed solar driers for apricots, taking advantage of the greater solar intensity at high altitude. At a midday temperature of 30C, temperature inside the drying cham-

ber is as high as 72C, and the apricots can be dried in three days, protected from contamination by dust.

Three scientists from Jadavpur University in Calcutta have proposed a "helio-hydro" project to produce electricity in the Rann of Kutch in Central Western India. The principle involved is that water could be allowed to flow from an "infinite reservoir", the sea, into a smaller reservoir if the water level in the latter drops because of evaporation caused by the sun. The flow could be used to drive a turbine.

The 12,000-sq-km Rann of Kutch is ideally suited to this scheme, they claim, and a 25-MW project is technically and economically feasible. R. SATAKOPAN

## The Swiss Are Worried About Water Pollution Problems

**GENEVA**—Swiss scientists went public last month to warn that the nation's water is threatened by growing pollution.

Two biologists—J.B. Lachavanne and Rene Wattenhofer of the Geneva Botanical Conservatory—began a systematic study of Lake Geneva (Lac Lemman) using aerial color photography to detect changes in the growth of macrophytes, plants which indicate temperature change, in the 582-sq-km lake, which is shared by France and Switzerland.

The first report in this study, which is projected for 10 to 15 years, showed that the diversity of macrophytes has diminished by more than half since the beginning of this century. This data will provide a baseline for the future study, showing whether the vegetation improves or degenerates further. The report received wide attention in the Swiss press.

France and Switzerland are joined in a long-term project to clean up the lake. All communities ringing it either already treat all sewage or are committed to it and to policing industrial pollution.

In a related development, public attention has been drawn to charges by hydrologist Leon Mornod of Bulle that Switzerland's waters contain high levels of radioactive tritium. According to Mornod, studies by Dr. M. Bezzegh of the Swiss Federal Institute for the Improvement, Care and Protection of Water show that the levels are particularly high in watch-making areas, where tritium is used for luminous dials. Ground water near a dial factory at Dubendorf, for example, showed a reading of 400,000 picocuries per liter (pci) at 50 meters from the factory, 50,000 pci at 100 meters and 1,000 pci at 7 km distance.

Mornod maintains that the tolerance limit of 30 million picocuries established in 1963 is too high and is meant to apply only to those working with tritium. He points out that Germany has set its limit at 100 pci and suggests that the admissible level should be even lower—not more than 30 pci, which is about what the natural level was before "H" bombs were tested.

WILLIAM G. MAHONEY



## Briefs...

### Scientists Agree on Program For Monitoring Mediterranean

Scientists from 15 countries met in Geneva last month and agreed on methods for monitoring pollution in the Mediterranean. A spokesman said this is the first time measurements will be made in exactly the same manner throughout the Mediterranean basin.

Starting this spring more than 30 laboratories in Mediterranean countries will begin sampling offshore waters and edible shell-fish for signs of pollution, as well as monitoring beaches for oil slicks, tar, dead organisms, empty bottles, wood, etc.,. The two-year project is intended to discover if pollution is worsening and, if so, how to check it. The scientists met under the auspices of the UN Environment Programme and World Health Organization.

### Istanbul's Golden Horn Is Called a 'Dead Sea'

The Golden Horn, Istanbul's famous bay, has become a "dead sea" and, unless effective measures are taken immediately, it will threaten the whole Marmara Sea. This is the conclusion reached at a symposium organized last month by the Istanbul Technical University.

An inspiration for 17th and 18th century poets, the Golden Horn has in recent years become surrounded by an industrial area, and its formerly beautiful villas, gardens and parks have given way to ugly concrete factories or slums. Recently, the bay has been filled with industrial wastes, plus the effluent from old sewage systems. Its coast is dirty and foul smelling.

Speakers at the symposium reported that 200,000 tons of polluted water per day are poured into the Golden Horn. Most life has died and what fish remain are contaminated.

The deterioration is blamed on unplanned industrial development accompanied by an inadequate sewage system and lack of treatment facilities. Penalties for industrial pollution are only about \$70. Because of this, very few of the hundreds of industries lining the bay met a deadline of last April for installing cleanup equipment, even though legal action has been taken against 50 firms.

The symposium participants advised a series of measures including strong sanctions to force industrial cleanup, a ban on throwing wastes into the waters, the construction of modern treatment plants and the gradual transfer of the factories, laboratories and workshops to other areas.

### Hong Kong Has High Pollution

Annual average levels of suspended particulate matter in the air of Kowloon — Hong Kong's most crowded area—have exceeded 100 micrograms per cubic meter for the past five years, with some areas exceeding 115. The U.S. standard for this pollutant is an annual average of 75. Half Kowloon's particulates are believed related to construction and the rest to industry and fuel burning.

### Man Jailed In West German Environmental Case

West Germany's biggest environmental trial so far ended in Hanau December 23 when a court sentenced the owner of a road transport firm, Siegfried Plaumann, to two years and three months in prison. He was found guilty of 14 counts of fraud, but the court said there was insufficient evidence to convict him of breaking existing water protection regulations.

Plaumann had contracted with a number of industries to dispose of their refuse, much of it toxic. Instead of burning these wastes, however, he

dumped them in a number of public refuse dumps. The prosecution charged that the ground water over a large area was contaminated as a result. When the scandal broke two years ago it led to the resignation of the Hesse State Minister of the Environment.

A new law, introduced by the federal Justice Ministry last year, provides for punishment in cases of water pollution, which is described as an "abstract offense." However, this law was not in effect in time for the Plaumann case.

### French Polluter Jailed Too

In France, Jean-Yves Brillet, general manager of a machinery cleaning factory, was sentenced last month to 15 days on charges he was responsible for polluting more than 10 km of the Aubette River with detergents. The court was told that Brillet and his Secam Company had been warned several times that they were illegally polluting the river. The company has 260 employees. According to the charges, the detergents destroyed plant and animal life along the river.

### Sri Lanka's Police Chief Asks Action on Wildlife Law

Sri Lanka's Inspector-General of Police, Stanely Senanayake, has ordered his force to crack down on "blatant violations" of the country's Fauna and Flora protection law, particularly with regard to three species—deer, leopards and turtles.

According to Senanayake, the Wildlife Conservation Department does not have the resources to enforce the law. The law totally prohibits the killing of leopards or the possession of their skins. There is an active illicit trade in collecting these skins for export. Killing deer and the sale of venison are also prohibited, but several cases have been detected, even to the point of venison being available on the



regular menu of some hotels. Five species of turtle—the leathery, giant brown loggerhead, the hawksbill, the green turtle and the star tortoise are totally protected, with possession or sale of flesh or eggs being prohibited.

In another step to protect the turtle, a local conservation group, the Wildlife and Nature Protection Society of Sri Lanka, has set up a turtle hatchery at its holiday bungalow. In 1975, 1,620 turtle eggs were purchased from villagers harvesting them on the beach, and the 1,416 turtles hatched out were released into the sea. A second hatchery is planned.

### Development Law Would Curb Mexico City's Growth

Federal officials have proposed a far-reaching urban development law to curb the unplanned growth of Mexico City. Today's population is estimated at 10 million, with another 1,000 added daily—400 immigrating from rural areas or other cities and 600 new births. Mayor Octavio Sentes and President Luis Echeverria have devised legislation to ensure rational development, equitable land distribution and provision of services to existing and future suburban areas.

The legislation would create four entities dealing with all aspects of comprehensive urban development for the capital ranging from legal research to formation of neighborhood advisory commissions.

The groups would be the General Director Plan group, the General Plan group, the Partial Plan group and the Economic Operation Commission. As explained by the mayor, the General and Partial Plan groups will conduct the actual visible work, while the other two will handle the legal and financial aspects.

City needs, such as street lighting, sewage, paving, water and electrical service extensions will be handled through the General Plan, the mayor said, while regional problems, such as zoning and neighborhood needs will come under the Partial Plan

group. A key part of this activity will be formation of neighborhood committees, professional organizations and other expert advisory organs on urban development.

### Conservation Groups Support Marsh/Lake Convention

Two international conservation organizations—the World Wildlife Fund (WWF) and the International Union for the Conservation of Nature and Natural Resources (IUCN)—last month urged all nations to sign a new convention to protect marshes, bogs and lakes. The appeal was issued from WWF headquarters in Morges, Switzerland.

The convention, which came into effect December 21, is the first international document protecting marshes and lakes, which the two groups said are among the most seriously threatened natural areas in Europe and elsewhere.

Parties to the convention so far are Australia, Bulgaria, Finland, Greece, Iran, Norway, South Africa and Sweden. Countries that have signed but not yet ratified include Belgium, West Germany, Ireland, Italy, the Netherlands, Switzerland, the Soviet Union and United Kingdom.

### ECE Seeks Common Safety and Exhaust Code for Cars

Two subsidiary groups of the UN Economic Commission for Europe (ECE) are developing an "E-mark code" for passenger cars that will eliminate trade barriers resulting from different national standards on safety, exhaust emissions and the like. There are now 46 Federal Motor Vehicle Safety Standards, including exhaust controls, governing vehicles imported into the U.S., and 36 ECE regulations; these regulations are steadily increasing. With the E-mark code, national authorities could give approval by type to entire

vehicles, knowing they meet a comprehensive set of standards now being developed by ECE's Group of Experts on the Construction of Vehicles. It is hoped this system can be a practical proposition by 1977. ECE also proposes that a group of experts study possible standardization of U.S. and European test procedures for vehicles.

### Abu Dhabi Builds Desalter

Deutsche Babcock & Wilcox AG of Oberhausen, West Germany, has been awarded a contract as project director for a 240-MW power plant and related sea water desalination plant in the Sheikdom of Abu Dhabi. The desalination plant will have a capacity of 72,000 cubic meters of fresh water a day. Total value of the contract is \$160 million. Babcock will provide the steam generating equipment, designed to burn either oil or gas, and the electric generating equipment. A Japanese firm will supply the water desalination equipment. The plant is scheduled to start up by the end of 1978.

### German Firm Tests Osmosis Desalination Plant

The West German firm, Krupp-Atlas, will construct the country's first experimental osmosis desalination plant this year on the island of Helgoland. The plant is expected to produce about 25 tons of drinking water daily from sea water, only a small part of the island's 700 to 750 ton consumption. But the project is designed mainly to compare the osmosis technique with others such as electrodialysis and centrifugation. German experts believe the osmosis process—already in use on brackish water—is promising because it uses relatively little energy. The latest membranes tested are made of polyamide and polyimide. Key factors are speed of flow through the membranes and their lifetime.



## Budapest Industry 'Regrouped'

Tivadar Nemeslaki, Hungary's Minister of Metallurgy and Machine Industry, told the National Assembly last month that the liquidation of about 260 plants in the Budapest area is planned. He said this would make the "regrouping" of about 10,000 workers possible. The factories are hindering the development of the Hungarian capital, he said, endangering environmental protection and blocking development of more efficient factory management. Nemeslaki did not name the factories nor make clear whether only parts of some of the plants would be shut down.

## New Dam Planned for the Ruhr

The Ruhr area cooperative society, Ruhrverband und Ruhrtalesperenverein, has been authorized by North-Rhine Westphalian authorities to proceed with a \$130 million dam on the Neger River to meet the growing water demands of the Ruhr, the most industrialized area of West Germany. The Neger flows into the Ruhr about 100 miles east of Essen.

Before construction can start, a village of about 400 inhabitants must be relocated, as well as seven miles of railroad and highway.

The dam will be the fifteenth under

the society's management. The dams supply fresh water to some 5 million inhabitants and major industry segments. The society also owns and operates 115 water clarification plants, four reservoirs and 17 hydroelectric plants. Construction of the dam is scheduled to begin in 1977.

## Ban Homes at Kuwait Airport

Kuwaiti Health Minister Dr. Abdul Rahman Al Awadhi has announced that construction of houses is to be banned in zones very close to Kuwait International Airport. Only certain types of housing using special materials and designs to minimize the effects of noise will be allowed to be constructed in zones further out from the airport.

## Park Service Plans National Park for St. Croix, V.I.

The U.S. National Park Service will prepare a master plan to convert 400 acres donated by Laurence Rockefeller on St. Croix, Virgin Islands, into a territorial park. The land lies adjacent to the Rockefeller-owned Fountain Valley golf club on the island's northwestern shore. Governor Cyril King said he would like to develop the property as the

first of a series of territorial parks intended to preserve some of the remaining natural environment on St. Croix and St. Thomas, the other main island of the Virgin Islands Territory. Most of St. John is already occupied by the Virgin Islands National Park.

King hopes to persuade the Park Service to operate the St. Croix park for about five years, or until the territorial government can develop the funds and expertise to operate it.

## Study Dortmund's Environment

The University of Dortmund's Institute for Environmental Protection and Planning has completed an exhaustive environmental survey of the City of Dortmund that identifies, locates and evaluates all major factors affecting the West German city's environment. Included are measurements of air quality, noise intensity and availability of recreation facilities. Data is plotted on a series of 18 large-scale maps so that all the factors can be evaluated relative to completion.

The interdisciplinary institute was founded in 1972 and is the only one of its kind in Germany. The Dortmund survey is the first it has completed. Other cities and the German federal government have expressed interest in similar surveys.

## Calendar...

**February 2-6**—Barcelona Two—Meeting of Plenipotentiaries to consider a convention and protocols for cleaning the Mediterranean. Barcelona. Sponsored by the United Nations Environment Programme (UNEP).

**February 2-9**—Third Regional Seminar on Environmental Pollution: Solid Wastes Management. Manila. Sponsored by World Health Organization (WHO).

**February 5-6**—Pure Water Expo '76. An "international event." Miami. Sponsored by Miller Associates International of Miami, Fla.

**February 10-19**—Intergovernmental Confer-

ence on Evaluation and Reduction of Earthquake Risks. Paris. Sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

**March**—Second African Meeting on Energy. Ghana. Sponsored by the United Nations Economic Commission for Africa (ECA).

**March 15-19**—International Symposium on the Development of Nuclear-Based Techniques for the Measurement, Detection and Control of Environmental Pollutants. Vienna. Sponsored by the International Atomic Energy Agency.

**March 15-19**—Executive Committee Panel of Experts on Climatic Change. Geneva. Sponsored by the World Health Organization (WHO).

**March 22-29**—International Symposium on the Management of Radioactive Wastes from the Nuclear Fuel Cycle. Vienna. Sponsored by the International Atomic Energy Agency.

**March 30-April 14**—Governing Council, Fourth Session. Nairobi. United Nations Environment Programme.

**April 20-22**—Seminar on Technologies of the Utilization of Low-Calorie Fuels. Zlatni Piasatzi, near Varna, Bulgaria. Sponsored by the United Nations Economic Commission for Europe (ECE).

**April 26-29**—International Conference on Air Pollution. Pretoria, South Africa. Sponsored by the Department of Health of the Republic of South Africa.





# World Environment Report

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FEBRUARY 2, 1976

## The Mediterranean: Hopes Are High for a Convention at Barcelona Two

*GENEVA*—Representatives from most Mediterranean states are meeting in Barcelona Feb. 2-16 to work out final details of an historic convention, plus two protocols, that would oblige them to cooperate in preventing pollution of that huge body of water.

The sponsor—the United Nations Environment Programme (UNEP)—is expecting approval of the convention and has tentatively chalked in a signature ceremony for Feb. 16. However, purely technical aspects—such as accurately translating all documents plus last minute changes in the many Mediterranean languages—may well delay initialing of the accord until a later date, even though approval has been given.

Political in-fighting could also delay agreement. The 18 invited states include some ancient enemies and getting them to even sit down together is considered by many to be a feather in UNEP's cap. The Arab states and the Israelis will be present. So will Greece and Turkey. Even intra-Arab squabbling is threatening attendance at Barcelona: Algeria, Libya and Morocco are among the invited and they are at odds over the Sahara issue.

UNEP spokesman Paul Ress told *World Environment Report* that 17 states may show up. If he is correct, this would leave only Albania on the sidelines. And even Albania has written UNEP expressing interest in what is now called "Barcelona Two." There were 16 states at "Barcelona One" a year ago. Invited are: Algeria, Egypt, Spain, France, Greece, Israel, Italy, Libya, Lebanon, Malta, Morocco, Monaco, Syria, Tunisia, Turkey, Yugoslavia, Cyprus and Albania.

The draft convention was planned at Barcelona One and since then UNEP, national experts and other international organizations involved—such as the Food and Agriculture Organization, have been drawing up the document. Therefore a great deal of national agreement has already been achieved.

The draft convention is entitled: "Convention for the Protection of the Marine Environment against Pollution in the Mediterranean." According to Ress, this amounts to "an umbrella agreement under which states will accept the general obligation to protect the Mediterranean from various sources of pollution, such as dumping, maritime activities, exploration and exploitation of the continental shelves and the sea bed and land-based pollution."

There is separate work under way on a protocol—

which will *not* be ready for Barcelona Two—on land-based pollution."

However there will be two protocols to the 10-page, 25-article Convention draft. The first protocol obliges contracting parties to take all appropriate measures to prevent and abate dumping and establishes a "black list" and a "grey list." The "black list" contains materials which are flatly prohibited, such as mercury, cadmium, persistent plastics or synthetics, crude oil and hydrocarbons and all high-, medium- and low-level radioactive wastes. The "grey list" material—including arsenic, lead, copper, zinc, chromium, nickel, cyanides, fluorides and pesticides, plus scrap metal—is barred except when special permission is obtained from competent civil authorities in each specific case.

The second protocol is significant in that it will oblige such states as Greece and Turkey, or Syria and Israel, to cooperate. It obliges contracting parties to cooperate in combatting pollution of the Mediterranean by oil or other harmful substances in cases of emergency. It is linked to already discussed plans to set up a coordination center in Malta, and Barcelona Two is expected to approve these plans. There have also been moves to set up such a center, or sub-centers, in Cyprus, Turkey, Greece and Syria. States would coordinate either directly or through the Center or both. The Center thus would permit a report from an Israeli freighter about an oil slick spotted in the Eastern Mediterranean to be passed to Syria without a delicate direct contact. All states would be committed to using national means to combat such oil spillage.

The Preamble to the Convention states that the Contracting Parties are concerned with the economic, social and cultural value of the marine environment of

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the Mediterranean area, are aware of their responsibilities to "preserve this common heritage for the benefit and enjoyment of present and future generations," recognize the threat posed by pollution, note that present international law does not cover all aspects of marine pollution, and realize the "need for close cooperation among states and international organizations concerned in a coordinated and comprehensive regional approach for the protection and enhancement of the marine environment of the Mediterranean area."

One interesting aspect is that if the present draft is approved, it binds the contracting states to "ordinary meetings" every two years to review progress and provides for an extraordinary meeting to be called upon need by any of two contracting states. Thus approval would commit unfriendly states in the area to sit down at a conference table together at regular intervals to discuss matters of concern to all.

WILLIAM G. MAHONEY

## Bulgarian Government Steps Up Environmental Protection Plans

**SOFIA**—Bulgaria's new five-year plan (1976-80) places more than 5,000 industrial and farm cooperatives under environmental protection regulations aimed at cleaning up the 240 miles of Black Sea coast, rivers and water resources in general.

The new plan allocates about \$500 million to set up state research and inspection stations. The plan divides Bulgaria into 12 regions, each of which will have inspectors to oversee any operation capable of polluting the water, air or land. Already established factories are investing in pollution control equipment, and new installations are being designed to comply with the strict new regulations.

For example, Bulgaria is now building the largest timber-processing works in the Balkans near the town of Silistra on the Danube. It is scheduled to start up by the end of 1979. It will process about 1 million cubic meters of timber annually into cellulose, paper, chip board, profile wood, yeast and furniture. A special harbor is being dredged for the project. But all construction, including the housing for workers, schools, the clinic and the processing works, will comply strictly with environment regulations, according to BTA, the Bulgarian national press agency.

Environment is also being given high priority at the largest industrial plants, such as the Kremikovitsi iron and steel mills, where modernization is underway. Water purification stations are planned or under construction along the Struma, Iskur and other main rivers. In towns, new housing construction will have built-in municipally supplied central heating to cut down on air pollution.

A pollution control system was begun last year aimed at cleaning up oil and other shipping wastes in the Black Sea. Strict controls were placed on oil carriers and dry-

cargo shipping and on all ports and coastal installations. The Bulgarian Black Sea is a tourist mecca that annually lures hundreds of thousands of hard-currency-carrying West Europeans to its miles of beaches.

The new environmental program has also established "Green Patrols" within the Bulgarian Hiking Union. These groups are charged with watching over the mountains, national parks and wildlife reservations.

WILLIAM G. MAHONEY

## British Commission Calls for Recycling Stockpile

**LONDON**—The Waste Management Advisory Council established by the British government in December, 1974, last month published its first report. At the same time, the government announced that it was implementing one of the Council's recommendations by allocating over \$2.2 million towards construction of two pilot plants to sort domestic wastes mechanically.

These pilot plants will test a method of "dry" sorting mixed domestic waste developed in an experimental plant at the government-funded Warren Spring Laboratory in Hertfordshire, where paper, metal and glass are extracted for reuse, as well as a fraction of the waste suitable for fuel. The pilot plants will have a minimum capacity of ten metric tons per hour. One will test extraction of ferrous metal and a shredded paper and plastic-rich residue suitable for conversion to fuel. The other will test mechanical separation of a wider range of materials.

This kind of mechanical sorting is considered by the advisory council to be the most promising method for

(continued on page 4)

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## North Sea Fish: Record 1975 Catch Puzzles the Experts

**BONN, West Germany**—Fishermen plying the North Sea in 1975 experienced a fishing boom unprecedented in this century.

According to Prof. Gotthilf Hempe of the Kiel Oceanographic Institute, catches of most species doubled or trebled. "We never would have dreamt it," he said, from all the available evidence. It is only two or three years since biologists began predicting the death of the North Sea as a fishing resource. Fishing fleets had decimated the stocks of plaice, herring, mackerel and cod. Industrial wastes and other effluents were pouring by the ton into coastal waters from the estuaries or major rivers such as the Elbe, Rhine and Thames. Pollution was increasing at an alarming rate.

Despite this bleak outlook, twice as many plaice were landed at Hamburg last year as in 1974, while cod and haddock catches more than doubled. Only herring and mackerel have become scarce.

For most of the twentieth century, the North Sea has yielded a million to a million and a half tons of fish annually. The catch for 1975 was over 3 million tons.

Biologists are at a loss for an explanation. Prof. Hempe says the decline of herring and mackerel may provide a partial explanation. These two species live off the larvae of others. Now that the two predators seem threatened with extinction, the survival chances of other fish have improved.

Nature has made life for the herring in the North Sea more of a struggle. An unexplained change in the sea's temperature patterns has chilled the water below normal, making it less conducive to the growth of plankton, another major part of the herring's diet. The herring have also been hit hard by an invasion of Atlantic tuna. Since their arrival two years ago, the tuna are estimated to have eaten over 400,000 tons of herring.

Another environmental factor—detergents containing phosphates—appears to have had a beneficial effect on North Sea fish, especially along coastal areas. According to a biologist with the Federal Fishery Institute in Hamburg, "This is a unique instance of environmental pollution actually producing favorable results." He explained the phosphates have assumed the role of a fertilizer on which algae, the first link in the marine food chain, can flourish.

The Rhine alone empties an estimated 30,000 tons of phosphates a year into the North Sea. In 1932, it was barely 7,000 tons. The resulting glut of coastal algae has produced an equal glut of non-edible small fish which the Danes have begun to process for fishmeal. While this is a cheap source of protein, biologists are disturbed by the practice because there is little to distinguish fishmeal species from the young of edible varieties. The Danes, they fear, are catching not only sprats and the like, but also young cod and haddock as well. Unless prompt

action is taken to curb this practice, biologists fear the sensational catch of 1975 will not be repeated.

Asked if West Germany plans to expand its North Sea fishing fleet on the basis of 1975, a spokesman for the High Seas German Fishing Company told *World Environment Report* that, while the catch was "extremely encouraging, we will wait to see what the next season produces."

Whatever happens to the rest of the catch, things seem sure to remain bleak for Western Europe's millions of herring fanciers. The North East Atlantic Fishery Commission, an intergovernmental body with 15 members, will meet in London during April to set the herring catch quota for the latter half of 1976.

Last November, the commission slashed the quota for the North Sea to 83,000 tons for the first half of 1976. The full quota for 1975 was 500,000 tons, but the participating countries fell far short of this amount. A similar herring crisis exists in the Irish sea. Scientists at the November meeting urged, unsuccessfully, that herring fishing be suspended altogether for a year.

JOHN M. BRADLEY

## French President Names a New Environment Minister

**PARIS**—French President Valéry Giscard d'Estaing has appointed a new Minister for the Quality of Life—Andre Fosset.

A champion of preserving what the French call "green spaces" in city centers in the face of pressure for more high rise construction, Fosset has been Municipal Counselor for Paris. He believes he was chosen for his new post because of his credentials in fighting for environmental protection. "I have the reputation of not letting go of a bone until I have licked it perfectly clean," he said, "and I think it's this kind of effort that will now be asked of me."

As his first official act, Fosset said he will call for a re-examination of the laws on protection of nature, the dumping of waste materials at sea and historically classified buildings.

"I am ready to do everything I can," he said, "to relaunch a plan the government recently stopped for an environmental protection agency for the Paris region, because we must give back people's reasons for living in urban areas. In practice, I will initiate these moves, not carry them out. It is up to local authorities to make their own decisions about their environment, without the authoritarian intervention of a central power."

Fosset credits the public sector for creating today's awareness of environmental issues and says it will be public opinion he will count on most in office.



## The SST: Debate Still Continues in Europe as Well as North America

GENEVA—The World Meteorological Organization (WMO) announced here last month that it does not consider supersonic planes, such as the Anglo-French Concorde and the Soviet Tupolev, to be a threat to the earth's vital ozone layer at present.

A WMO spokesman said this finding represents the consensus of best scientific opinion on the effect of manmade devices on the ozone layer. At the same time, the WMO declared that aerosol sprays, if used at the present rate, could increase harmful ultraviolet rays reaching the earth by some 20 per cent.

These opinions were gathered by scientists and experts from nine of WMO's 142 member countries. These experts are meteorologists rather than biologists, and therefore did not go into the biological effects of any increase in ultraviolet radiation.

The WMO experts found that current supersonic aircraft would not significantly affect the ozone layer because only 30 to 50 of them will be in operation and they will fly below the ozone layer i.e., at about 17 km. But they warned that "a large fleet of supersonic aircraft flying at greater altitudes is predicted to have a noticeable effect on the ozone layer."

The WMO findings come at a time when both aircraft have just begun scheduled flights and when the U.S. Department of Transportation is pondering whether to allow flights into New York or Washington.

While this decision is being made there is still significant opposition to the Concorde in both Britain and France on economic and environmental grounds. In France, where consumer interest groups are rare, the country's most outspoken and effective environmental group, Friends of the Earth, has just circulated an "Open Letter to Those Responsible" saying that "in reality, the responsibility for the economic fiasco of the Concorde belongs to France."

Henri de Cazotte, a spokesman for Friends of the Earth, told *World Environment Report* that "the people leading the debate now going on in New York and Washington against granting landing rights to the Concorde are merely going what we should have done in France but never did. In France, there is never any debate in the government on such projects involving environmentalists, trade unions or other interested members of the public."

Friends of the Earth dismisses charges that the real issues at the heart of the Concorde dispute are political or technological, rather than environmental. "Even if technology could someday solve some of the objections," said de Cazotte, "it would mean such drastic changes in the basic design of the plane that it would no longer be the Concorde."

The open letter spells out the now-familiar environmental issue—noise level, sonic boom, effects on the upper atmosphere, energy consumption—and also attacks the plane's commercial prospects. Air France and

British Airways pay about \$25 million each for a plane that costs \$45 million to produce. Even so, British Airways has said it expects to lose \$50 to 80 million per year on a fleet of five Concorde's, the letter says, and Air France should lose even more. It is French and British taxpayers who are footing this bill, Friends of the Earth points out.

Possible routes for the Concorde appear to be getting less rather than opening up, de Cazotte said. The major routes so far are Paris-Rio, Paris-Caracas, and London-Far East. But overflight restrictions have forced a drastic speed reduction on the Far East route and the resulting refueling stops make the plane even less competitive.

"If the Concorde is refused landing rights in the U.S.," de Cazotte concluded, "it will be on the overwhelming environmental issues." But if the Concorde is accepted, he said, it will probably be for political reasons.

WILLIAM G. MAHONEY, PAMELA TAYLOR

### Waste (Continued)

large-scale reclamation of waste, although it also hopes there will be an extension of such schemes as the Oxfam "Wastesaver" plan where citizens presort their waste at the source. This plan is being extended to 6,000 households in Yorkshire.

Another pilot plant the council would like to see constructed, also based on Warren Spring experiments, is one testing pyrolysis, the destructive distillation of wastes, which could increase the production of by-product fuel.

An important recommendation in the council's report, affecting both waste paper and scrap metal, is for an excess stock system. Both the paper and board industry and the steel industry are subject to cyclical fluctuations in demand that disrupt and demoralize waste collection programs. The council's plan would prevent export of metal scrap at periods of low demand and would stockpile waste paper in anticipation of the expected 1.1 million metric ton increase in demand for waste by the paper industry by the 1980's.

The first report covers domestic and industrial waste on which over \$6 million was spent for research and development in 1974-75. In 1976, the council will also study agricultural wastes.

Dr. Robert Berry, chairman of the council's research and development committee, has just been appointed as first director of the National Anti-Waste Program. One of his tasks will be to establish priorities, a recurring theme in the council report, which states "it is essential, in the current economic situation, to give preference to programmes which are likely to provide financial benefit or resource recovery within the next few years."

ALAN MASSAM



## Open Pit Coal: German Company Is Praised for Its Reclamation Program

*BONN, West Germany*—Anyone who has visited the open pit mining regions of Kansas, West Virginia or Pennsylvania knows that, without restoration, this industry can produce some of the most desolate landscape on earth.

But imagine a coal mining company that grows by 15 per cent a year, pays dividends to its stockholders and still builds model towns, farms and forests, provides lakes for

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*Late last year, Rheinische Braunkohle A. G. was presented with the \$250,000 Krupp prize, in part for its environmental protection measures associated with its open pit coal mining operations (WER, Dec. 22, p.6). Our West German correspondent has prepared this report giving more details of Rheinbraun's program.*

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recreation and public water supply, engages in basic forestry, agriculture and geological research—all in the process of restoring the open pit mines from which it derives its revenues.

The Rheinische Braunkohle A.G.—Rheinbraun for short—is, in the words of a sympathetic observer, “really a regional planning and development organization which gets its funds from the sale of energy instead of public taxes.”

After observing the work at several Rheinbraun pits, former U.S. Interior Secretary Stewart Udall reported to then-President Johnson, “By contrast, the work of mine restoration in the U.S. is in its infancy. . . . A thorough understanding of the German approach to mine restoration would be helpful to those who are attempting to find a solution to the problem in (the U.S.).”

Rheinbraun mines and sells over 85 million tons of brown coal in an average year. In the course of its work, 20,000 persons have been displaced from mining sites and resettled in six new company-built towns; of 45,000 acres taken for mining, 8,000 have been replanted as forest and 7,000 reconverted to productive farmland; six forested and lake-studded recreation areas have been built which are used by 20 to 30,000 picnickers, hikers and fishermen on an average fine weekend.

Rheinbraun mines lignite in a 100-sq.-mile area between Cologne and Aachen that contains rich deposits, enough to last 60 years at today's production rates. Improved technology and machinery could increase the reserves ten-fold. The lignite occurs in 30- to 300-foot seams under an overburden of clay, sand and gravel up to 600 feet thick.

The overburden is too unstable for underground mining, and the lignite is extracted by open pit, that is, by digging straight down. The sequence is removing the overburden with the least possible damage to the sur-

rounding countryside, removing the lignite, filling the hole, and then restoring the land to the usable condition required by German law.

First step is to remove the top soil to a storage area for later use. A pit is then dug large enough to accommodate the giant shovels, excavators, bulldozers and conveyors that have revolutionized open pit mining. The overburden is hauled a short distance away and promptly planted with trees and shrubs to prevent erosion and to establish a permanent forest.

The distance between the advancing pit face and the refill area is seldom more than a mile, while the pit may be two or three miles across. The demarcation line between the pit and the undisturbed land ahead is sharp: on one side, the pit drops steeply in terraces to 1,000 feet or so, on the other side is farmland or forest. To the rear, as soon as the exhausted pit is filled and graded, it is given a 3-ft. cover of top soil, either pumped in as sludge or hauled dry by rail, and is planted with suitable crops or seedlings. No attempt is made to fill the deepest excavations. Instead, their sides are graded and they are allowed to fill with surface and groundwater to serve as reservoirs or recreational lakes.

A major problem is water disposal and conservation. Before excavation, underground streams and pools are located by test boring and pumped into existing surface streams or manmade canals. Another problem is the resettling of farmers and villagers. The company has authority, backed by the courts, to force property owners to sell. But it has earned a reputation for fair dealing, taking into account such extras as shrubbery and fences as well as houses, farmland and trees in determining prices.

Hans-Gerd Schuette of the Mannheim College of Economic Studies reported that “instances of dissatisfaction with Rheinbraun's payments are practically unknown,” and that among persons who have been resettled in the new company towns, “85 per cent said they were better off than formerly.”

Cost of the program is hard to pin down. Rheinbraun's public relations office says these items cannot be separated from other operating costs and that, in any case, “they don't amount to much on a ton of briquettes or a kilowatt hour.”

It should be noted that Rheinbraun does not carry on its program through altruism. Land restoration is required by law, and the company's charter specifies the composition and authority of the official bodies that have a voice in the management of the entire operation. The parties participate jointly in all mining and development plans as far as 30 or 40 years into the future. Representatives of agencies responsible for agriculture, forestry, water resources and housing at the state and local level are members of the planning commission. Cooperation between them and the company appears to be exemplary.

JOHN M. BRADLEY



## Briefs:

### Austria Will Spend \$51 Million On Water Cleanup Projects

The Austrian government has decided to spend a billion schillings (about \$51 million) to finance water pollution control projects, some of them already in operation, on the country's rivers. Power stations and factories, especially paper mills, will be required to contribute particularly heavily toward cleaning and cooling projects.

The government will also begin an extensive public education program this year on the importance of clean water supply and the public's duty to avoid polluting streams by misuse or dumping rubbish.

The Viennese like to think of their stretch of the Danube as blue, but everyone can see it is a dirty grey-brown. But the Danube is still relatively clean, as far as major European rivers go, and more than 100 species of fish are found in it.

### Ford Foundation Sponsors Nuclear Policy Study

The Ford Foundation has announced a one-year Nuclear Energy Policy Study financed by a \$679,354 grant to the Mitre Corporation. The study will consider civilian use of nuclear power in terms of its alternatives in an international context, and will focus on such issues as safety of current and proposed nuclear power systems, the international control of nuclear technology and materials, the management and disposal of nuclear wastes and the economics of nuclear power.

The policy study is to be headed by Spurgeon Keeny, former assistant director of the U.S. Arms Control and Disarmament Agency, and the study group will consist of 18 members from academic institutions and industry. They were chosen, according to Ford's president McGeorge Bun-

dy, as "outstanding professionals who have not taken hard positions on nuclear power issues and who are in a position to make independent judgments."

The Princeton research will examine the problems associated with a "plutonium economy," i.e., what would happen if an international network of breeder reactors and processing plants were engaged in producing, using, shipping and storing tons of plutonium. The MIT workshop involves experts from 13 countries who are integrating national and regional energy supply and demand projections into a "consistent global blueprint." The goal is alternative strategies for a global transition from oil and gas to less-limited resources.

### Restrict Traffic in Bogota

Bogota's traffic department plans to reduce drastically the circulation of private vehicles in the Colombian capital's downtown sector as a means of saving gasoline and reducing air pollution and road maintenance costs. Some 180,000 cars will be banned from the area, and only buses and collective taxis will be allowed to circulate. Pedestrian walks and bicycle routes are also planned in the downtown sector. The department plans to put the project into effect this month.

### Istanbul Nuclear Center Called Hazard to Nearby Waters

The Nuclear Energy Center near Istanbul is a potential danger to the waters of two nearby lakes, according to local experts. Fahir Yenicay, director of the center, told reporters that the two lakes—Buyukcemkece and Kucukcekmece—"have become dangerously radioactive" because of wastes from the center. The center is about 20 miles from Istanbul and has a 5-megawatt reactor. The director said it is now too late to move the center and that plans for using the

lakes for fishing, irrigation or drinking water should be abandoned.

Nejat Aybers, director of Istanbul Technical University's nuclear energy department, also warned against using waters from the lakes and said it had been a mistake to locate the center near the airport and in the path of suburban development. "An accident at the center would be a disaster for the whole city," he said. The issue arose when local officials proposed tapping Kucukcekmece for drinking water.

### Developing Countries Should Look to Renewable Energy

Countries such as Pakistan should concentrate their efforts on exploiting renewable sources of energy, such as garbage, solar, wind, bio-gas, animal and agricultural wastes, according to Dr. I.H. Usmani, energy advisor to the UN Environment Programme (UNEP). Speaking at a Karachi meeting of the Pakistan Association of Scientists and Scientific Associations, Usmani said that "municipal garbage is organically very rich and if it is utilized in a scientific way, it can produce energy for various purposes."

He pointed out that Karachi (population 4 million) generates 2,000 tons of garbage every day, but only one half is collected and then destroyed without reclaiming its energy.

Conventional large nuclear, hydro or fossil-fuel power plants are not immediately practical for rural areas not already served by electricity, Usmani said, because of the high cost of laying transmission lines and the decades it would take to establish a national power grid. He estimated that 2 billion people in Asia, Africa and Latin America are without benefit of modern electric lighting systems.

Usmani said he has asked the government of Pakistan to propose four energy demonstration projects for funding by UNEP. Usmani was formerly chairman of Pakistan's Atomic Energy Commission.



## Poland Applies New Charges for Use or Abuse of Its Waters

Poland's newly amended water protection law applies financial pressure to industrial consumers and polluters of water. Effective January 1, 1976, the law institutes a system of use charges and fines for abuse. According to Polish press reports, industrial plants are now charged for the first time for any waste they dump into inland waters. These measures, the reports said, do not exclude fines for excess use or water pollution. The charges vary according to water availability in a given region, and also reflect both the concentration of pollutants in a discharge and the classification of the receiving waters. Charges for polluting first class waters where salmonoid fish can live, for example, are some 40 per cent higher than the next classification.

The regulations impose on all plants the responsibility for improving their waste treatment within the present five-year plan. Plants that do not now have waste treatment facilities are obliged to build them.

## Kuwait Plans Tourist Mecca

Kuwait's Ministry of Public Works has drawn up a 10-year plan that would make the oil-rich country a center of tourism for the Persian Gulf. The enormous plan includes among other things, a big public garden, amusement parks and sports stadiums designed in collaboration with international consulting firms. Bader Saoud Al Abdul Razak, undersecretary of the ministry, said the plan includes a number of boating clubs, swimming pools, golf and tennis clubs (covered with artificial turf and holding 10,000 spectators), horse and camel race courses, and a 50,000-seat football stadium. Also included are a gliding school, Arab museum, meeting hall, opera house, concert hall and a museum for marine animals. A 200-meter tower with a restaurant on top would be built overlooking an

artificial lake on Al Dawha island, and other artificial lakes would be built inside concrete caves joined to air-conditioned underground restaurants.

A 500-room hotel would also be built on Al Dawha, which would be connected to Kuwait, the capital, by a helicopter service connecting with trains. The islands of Warba and Bubyah would be cleared of swamps, planted with trees and connected by bridge.

## Malta's Mediterranean Is Clean

Students from Mediterranean countries recently met in Malta under the auspices of the International Oceanographic Institute and the University of Malta. They agreed on a commitment to the ideal of the Mediterranean as a "clean" sea of peace and the development of its resources by strengthened regional management structures.

Meanwhile, a German underwater photographer, Arnd Rodiger, said that Malta itself is surrounded by a clean, clear sea, the "cleanest in the Mediterranean." Rodiger reported finding a species of fish, the John Dory, he says is now very rare and said he encountered good visibility off Malta even at 60 feet deep in bad weather. He said he found no pollution with oil, drainage or chemicals.

## Swiss Use Lichens To Draw Air Pollution Map

Two Swiss scientists—Gilbert Turian of the University of Geneva and Paul Desbaumes of the Cantonal Institut d'Hygiene—have prepared an air pollution map of Geneva and its surrounding canton based on the growth of lichens. Ringed areas on the map show progressive improvement in air quality as one moves away from the city center.

Different types of lichen have different tolerances to pollution. "Lecanora", for example, is sturdy,

and survives even in a polluted area; "pamelies," on the other hand, become sterile and die at the first contact with polluted air. The two-year study noted that a century ago pamelies were plentiful on the oaks in the Vengeron wood; today they have all but disappeared from the canton's residential areas.

The study found that lichens are rare in the central city, despite Geneva's relatively clean air, its parks, its waterways and its prevalent winds. Searchers found only a few sterile lichens in the parks bordering the lake shore. In suburban sections, the map's second ring, searchers found yellow lichens (*anthoria parietina*) with varying degrees of sterility. The variances showed that wooded areas provide a strong brake to pollution effects.

In the third ring, beginning about 6 km from the city center, the sensitive pamelies were found. There were two polluted enclaves within this third ring—the Geneva airport region and the European Nuclear Energy Research Center.

## Irish Plan New National Oceanographic Institute

The Irish government is studying proposals for a National Institute of Oceanography, as recommended by a report of the Organization for Economic Cooperation and Development (OECD). Ireland's government has long been criticized for not developing the island country's marine resources. The institute should have two major branches, according to the OECD report—one for hydrography and oceanography and the other for pollution research. The former would be based in Galway and the latter in Cork.

In reaction to the report, the government has already announced its decision to buy a multi-purpose ocean research vessel by next summer. Mariculture is also to be studied by government departments and fish farming is expected to get a financial boost. Irish waters are considered relatively pollution free.



## Vietnam Herbicide Used in Mexico's Drug War

A herbicide used by the U.S. in Vietnam has been drafted into Mexico's fight against marijuana and opium. Known as Gramoxone, the herbicide has been used successfully by the Mexican Army in eight states where most of the illicit drugs are grown. By spraying the chemical from helicopters, the government claims to have destroyed five times as much opium and marijuana growth—2,551,000 sq. meters vs. 557,000—in December 1975 as it did in December 1974. It is estimated that Mexico has about 600,000 sq. km of these plantations. The herbicide is "inoffensive to the ecology," according to a government spokesman.

## China Forecasts Earthquakes

Chinese representatives at a recent meeting of the Japan Seismologic Society in Tokyo claimed that China has accurately predicted the major earthquakes that have occurred throughout the country in the last ten years. Close cooperation among the 10,000 observers and using more than 100,000 monitors has made this possible, they said. The nationwide network was begun in 1966 after a severe earthquake damaged the outskirts of Peking.

Major earthquakes that have been predicted include those hitting the Gulf of Pohai on the northeastern coast in 1969, two that hit Szechuan Province in Central China in 1971 and 1972, and one that hit Lianoning province in the northeast in February of last year.

## Irish Name IRS Focal Point

The Irish National Physical Planning Institute—An Foras Forbartha—is to be the Irish focal point for the UN Environment Programme's International Referral System for Sources of Environmental Information (IRS). The UNEP system is to be

a network of information sources in more than 50 countries designed to facilitate transfer of environmental information from the developed to the developing countries. The U.S. focal point is the Environmental Protection Agency (EPA).

An Foras Forbartha has also recently concluded an agreement on document exchange with EPA and is compiling an inventory of information sources for the European Common Market.

## Swiss Environmentalists Protest Rhone Fluorine

Environmental groups in the Swiss canton of Valais are protesting that industrial firms along the Rhone River are discharging some 1,500 tons of fluorine into the atmosphere annually. The Association for the Defense against Poisonous Emanations held a press conference at Martigny over the holidays and charged that a major culprit is the aluminum firm Aluisse at Chippis. The group charged that pollution from the plant has damaged plant and animal life and poses a grave problem for workers. Farmers have already staged peaceful demonstrations before the Swiss Parliament and have had their representatives bring the issue up. Since the Rhone feeds Lake Geneva, the problem extends to communities located on that body of water.

## UNDP Aids Haiti Energy Study

The UN Development Program (UNDP) last month signed an accord with the government of Haiti covering the investigation and use of new energy sources. The International Bank for Reconstruction and Development also is participating.

First phase of the project is an allocation of \$399,000 for a study of the projected energy needs of Port-au-Prince and the rest of the island republic through 1995. Port-au-

Prince today consumes almost the entire output of Haiti's only major source of electricity, the Peligre Hydroelectric plant. Except for a few cities, the rest of the country is totally without electric power. Peligre supplied 97.6 million kw during 1971 and expanded to 156 million kw in 1974. It will soon be unable to supply Port-au-Prince if this rate of increase continues.

The project will try to establish alternative sources of power available. Haiti has only the one river capable of hydro-electric development, but has large and virtually unexplored lignite deposits.

## Non-Waste Technology Seminar

The UN's Economic Commission for Europe (ECE) will hold an international seminar on non-waste technology in Paris Nov. 29 to Dec. 4, 1976. Participants will attempt to establish concepts of non-waste technology to prove that their adoption could reduce environmental degradation and conserve natural resources. Case studies will be presented from the iron and steel, pulp and paper, packaging and tire industries. Participants will discuss cost-benefit, as well as the legal and fiscal measures demanded.

## New Book Looks at Latin American Pollution Control

What is believed to be the first original Spanish-language study on environmental contamination, both rural and urban, has been written by Mexico's subsecretary for environmental improvement, Francisco Vizcaino Murray. Publisher of the book is the Fondo de Cultura Economica in Mexico City. Called "Contamination in Mexico," the book cites problems common to Mexico and many other countries and describes the programs aimed at solving them. It details experience since passage of Mexico's federal environmental protection law in 1971.





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## Guidelines Set for Shared Resources

**NAIROBI**—A UN Environment Programme (UNEP) working group meeting here late last month adopted three principles and several guidelines to be followed in the conservation or exploitation of natural resources that are shared by two or more states. Although they are not binding, the guidelines could be incorporated into bi- or multilateral treaties concluded by the states in question.

The first principle states that nations have a duty to cooperate "with a view to controlling, preventing, reducing and eliminating adverse environmental effects which may result" from exploitation of a shared resource.

The second suggests that nations should "endeavour to conclude agreements between themselves in a legally binding manner or should enter into other agreements. Such agreements should take into account the present principles and guidelines."

The third says that nations have a sovereign right to exploit their own resources according to their various environmental policies, but it is their responsibility to ensure that these activities do not cause damage to the environment of other states.

The guidelines cover such issues as exchange of information, notification, consultation, scientific studies and environmental assessment.

The report of the working group will be presented to UNEP's Governing Council, which will meet for its fourth annual session here March 30 to April 14.

## Europe's Ill Winds Blow The Baltic Sea a Lot of Good

**COPENHAGEN**—This winter's raging westerly storms, which have damaged the dikes along Denmark's Jutland coast, have also given the eutrophying Baltic Sea a desperately needed shot in the arm.

The gales and exceptionally high water levels have pushed masses of North Sea water through the Danish Belts into the Baltic. The first gale pushed an estimated 100 cubic kilometers of water with a high oxygen content into the Baltic, while a less-severe storm delivered a second injection.

Arne Nielsen, a scientist in the Danish Environment Ministry, said the injections of oxygenated waters were

the biggest in 25 years. He forecast a revival of plant, animal and fish life for years to come.

Already the Oresund between Denmark and Sweden has a fresher and saltier taste. Further east, in deeper waters, the new, heavier salt water has settled to the bottom. Nielsen said it could be ten years before it works its way into the surface fresh water to make the Baltic really clean.

A possible complication is that the new salt water will be considerably diluted later this year when the snow masses around the Gulf of Bothnia melt and send fresh water into the Baltic. This water will stream south and then through Danish waters to the Kattegat and into the North Sea.

The most desirable situation for the Baltic would be stable west wind for longer periods than have been registered in recent years, Nielsen said. Westerly winds have been less frequent since the climatic change registered over Great Britain in 1951.

## Japanese Test Solid Waste Disposal By Steel Production Process

**TOKYO**—Japan's leading steel company is experimenting with a new fusion method at its blast furnaces for disposal and recycling of municipal and industrial waste.

Nippon Steel Corporation reports that, as a result of experiments already conducted, its Kitakyushu plant is now destroying 30 tons of waste daily, sufficient to meet the requirements of a city with a population of up to 350,000. In addition, according to Nippon Steel, by using the gas generated by the waste as fuel the plant is developing a recycling system that will make continual

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operation a distinct possibility, reduce maintenance costs and cut down the danger of secondary pollution to a considerable degree.

The blast furnaces, which replace the old waste incinerators, are on a much smaller scale than the usual steel works furnaces. An oxygen-heavy fire is fed into the bottom of the four-meter-tall furnace, where it combines with the carbon in the waste to reach a temperature of 1700°C. This is hot enough to melt steel.

Gas generated by the burning waste is funneled out the top of the furnace and reused as fuel. The remaining slag and pig iron can be used as a source of steel.

The company emphasizes that the new system also avoids the danger of secondary pollution from hydrogen chloride and nitric oxide, and glass, plastic and other materials need not be separated from the mass before the waste is treated.

Nippon Steel claims the cost of the blast furnace disposal system is in the same range as conventional incinerators and that the overall figure can be reduced if it is operated on a more or less continual basis.

## Japanese Propose Limits on Plastic Food and Beverage Containers

**TOKYO**—Japan's Health and Welfare Ministry is studying legislative measures to establish new safety standards for all plastic products sold in the country. Expected to be strictly regulated are such goods as those made from polyvinyl chloride (PVC), polystyrene, polyethylene and polypropylene. There is serious concern regarding plastic food containers and household wares following a recent spate of reports of poisoning cases involving such items.

Under the planned standards, all liquid containers made of polystyrene, for example, would not be allowed to release more than 2,000 ppm of styrene monomer when heated to specified temperatures.

Anxiety reached a peak in late 1975 when scientists at the Research Laboratory of Public Health of Tokyo's Metropolitan Government detected vinyl chloride monomer in soy sauce and edible oil which had been packed in PVC containers and sold in local markets. The Tokyo government has decided to enforce its own control measures independently of the federal government. The city fathers believe that vinyl chloride monomer can cause liver cancer and other liver troubles when it is dissolved in these foodstuffs.

Tokyo authorities have instructed container makers and food suppliers to recall voluntarily all food containers where more than one ppm of vinyl chloride monomer has been detected.

Since U.S. scientists related industrial vinyl chloride exposure to liver problems among workers, local checks at Japanese PVC plants have also turned up large numbers of liver ailments among workers, including one death at Nagoya.

A.E. CULLISON

## Common Market Allows Joint Processing of Spent Nuclear Fuels

**BRUSSELS**—While controversy surrounds the treatment of nuclear wastes in some member countries, the European Common Market has given its approval to a major three-nation joint effort in the reprocessing of irradiated nuclear fuels.

The Common Market move allows British, French and West German firms engaged in this field to cooperate in investment, marketing and actual allocation of workload and contracts. Such prior approval was needed to avoid contravention of Common Market antitrust laws.

First, the EEC authorities here allowed four German firms—Bayer AG, Hoechst AG, Gelsenberg AG and Nukem GmbH—to set up a joint company, the KEWA company, through which they plan to acquire an interest in the three-nation combine. The KEWA partners will be the British Nuclear Fuels Ltd. and the French Commissariat à l'Energie Atomique, who will join together in a new United Reprocessors Gesellschaft mbH (URG).

The URG cooperative effort will be aimed at providing services for the processing of nuclear oxide fuels to recover the uranium-235 and plutonium which remain after irradiation in reactors and can be used in nuclear fuel fabrication. The French and British participants in this plan already operate such facilities at Cap de la Hague and Windscale, respectively, while the German plant will be built at a site still to be determined, to be operational when the first two sites are at full capacity.

The EEC authorities, in making their decision, noted the environmental, technological and economic complexities of this new industry and reasoned that they wanted to encourage European development and efficiency.

(continued on p. 5)

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## Britain's Air: Royal Commission Urges Central Pollution Inspectorate

LONDON—Britain needs a new central inspectorate for the control of air pollution from domestic and industrial sources which could pool all the technological expertise now necessary in dealing with modern industrial processes. It should also take into account related forms of pollution, so that reduction in air pollution does not lead to, say, water or land pollution.

This is one of the main recommendations of the Fifth Report of the Royal Commission on Environmental Pollution entitled "Air pollution control: an integrated approach."

The Commission, whose chairman is the distinguished physicist Sir Brian Flowers, finds the existing means of control through the Alkali Inspectorate and local authorities too fragmented for today's problems, although the report praises the tradition of co-operation rather than confrontation which has been built up with industry. It envisages the central inspectorate, to be called Her Majesty's Pollution Inspectorate (HMPI), as a body small in number but containing the highest level of technical expertise. It should continue the tradition of working closely with local authorities, perhaps using some of their Environmental Health Officers, so that information about local conditions and expert technological knowledge could pass up and down this chain.

Under the Control of Pollution Act, 1974, local authorities have responsibility for air pollution from domestic sources and from local industry; these responsibilities should remain, suggests the report, but with new flexible regulations which make it possible to transfer industrial processes from local to central control as needed.

The report rejects specified national air quality standards such as those existing in the U.S. and West Germany, in favour of the "best practicable means," (bpm) concept for monitoring and controlling pollution. This phrase was coined in the first Alkali Act of 1863 and Britain recently won the right in the EEC to retain the concept in the control of water pollution. Its strength lies in its flexibility; bpm can reflect both local conditions and overall national considerations. For example, it would be unnecessarily costly, the British believe, to apply the same standards to industrial emissions in isolated rural areas as in heavily populated urban ones.

To avoid the danger of imprecise standards arising from such a system, the Commission recommended the establishment of "air quality guidelines" by the Government, within which local authorities could set targets for such pollutants as particulates, sulphur oxides, nitrogen oxides, lead and carbon monoxide, which would both reflect differing local conditions and allow for short and long term control aims.

Working in conjunction with the central inspectorate, local authorities would have the responsibility of registering any polluting industry, which should then be issued with a document of "consent", suggests the report.

The "consent" should define the bpm of limiting pollution for that plant, be renewable every two or three years, and be open to inspection by the public and the industry itself. This would have the benefit of involving the community and also make clearer the basis of any prosecution which might ultimately result.

Most of the report's 94 recommendations are concerned with the implementation of HMPI and bpm. An important one for the future is that local authorities should have regard to pollution conditions in planning land use.

The government has not yet commented upon the recommendations contained in the report, but their cost-consciousness should appeal in the present economic climate.

ALAN MASSAM

## Tokyo Limits Disposal of Toxic Industrial Wastes

TOKYO—This city's Metropolitan Government has severely tightened restrictions on the disposal of industrial wastes in an effort to prevent secondary pollution. Under the new regulations, all factories within the limits of Tokyo must detoxify their wastes before disposing of them or bury them beneath the ground.

The action followed discovery of high levels of toxic hexavalent chromium—20 to 30 times average levels—in a polluted area of the city. A recent survey found samples containing as much as 0.086 micrograms per cubic meter of air. The chromium pollution is believed related to indiscriminate dumping of slag by Tokyo corporations, much of it in landfill areas near public housing or on land later sold to the city.

During tests of soil, dust, tap water, well water and sewage, relatively heavy concentrations of hexavalent chromium and some other heavy metals were found, especially in areas where the Nippon Chemical Industrial Company has deposited wastes for years. The tests revealed iron, manganese, chromium, copper, nickel and several other metals.

To impose its new regulations, it is expected the city will make available several acres of reclaimed land on the shore of Tokyo Bay, but this space may be limited to smaller companies that would find the new restrictions too costly otherwise.

Plant executives are now required to maintain records of all dumping and to make regular reports to the Tokyo government. The city intends from now on to inspect all factories and to assess stiff penalties on those who do not adhere to the new regulations.

The restrictions require that factories must burn inflammable discharges, such as plastic refuse; they must crush garbage and press metal slags or ceramic wastes before dumping.

A. E. CULLISON



## Denmark Is Worried About Potential North Sea Oil Spills

*COPENHAGEN*—A major spill in the North Sea oil fields could have catastrophic consequences for Denmark's west coast, according to a report prepared for the Danish Environment Commission by ocean biologist Klavs Bender. In fact, seepage from oil installations has already affected the breeding grounds of fish, the report says.

The report states misgivings at the speed with which oil exploration and exploitation is going on, pointing out that there has not been time for environmental assessment.

In the case of a spill, Bender says, from a blowout or a tanker wreck, for example, oil booms or chemical dispersants would not be adequate because of the North Sea's violent weather.

"Cleaning up will have to be left to nature itself and we can take action only when the oil reaches the coast of Jutland after several weeks," Bender's report says.

The Commission is interested not only in Danish drilling, but also in the Norwegian and British operations. Norwegian research has shown that oil from these drilling locations could also drift to Denmark's west coast in certain weather conditions.

Bender's report says a blowout from an oil rig could lose 100,000 tons in the 40 to 50 days it would take to stop it by a relief boring. A break in a pipeline could release 30,000 to 40,000 tons, he adds.

Danish authorities are also concerned over rinse waters released from oil platforms. Norwegian research has shown that this type of spillage is negligible, but Bender argues that even low concentrations can cause damage because the rigs are in the spawning and maturing areas for herring, mackerel and cod.

Some researchers say that there is about one pound of oil lost in the sea per 1,000 pounds produced by a given rig. Danish and U.S. oil companies claim this is closer to 0.27 per thousand. But Bender points out that even this lower figure would be a significant amount when the North Sea production reaches the anticipated level of 200 million tons annually in the 1980's. *CONSTANCE CORK*

## ECE Seminar Urges Drastic Action on Coastal Pollution

*GENEVA*—An Economic Commission for Europe seminar has agreed that national governments must take drastic steps to combat coastal pollution. Meeting in Lisbon in November some 50 delegates from 17 countries and ten international organizations agreed that national monitoring programs are needed on coastal pollution and suggested that governments should define the pollutants to be investigated. The seminar, whose results were reported here, proposed that bilateral or multilateral

assistance should be given countries not having the resources to participate in monitoring programs.

National standards and legislation should be based on criteria established by competent international organizations, the delegates agreed. They proposed that governments strengthen pollution laws and, through land use planning, ensure proper siting of potential polluters. Water quality standards should be established as soon as possible, and governments should harmonize their national regulations on water pollution.

The seminar noted that the technical means for controlling municipal sewage are well known, but it is not always economically feasible to treat industrial wastes adequately. It also said that the planning for tourism, industry and urban development should include environmental considerations. In industry, water consumption should be reduced, if necessary by new technology, and waste waters should be recycled where possible.

## ECE Pledges High Priority For Environmental Concerns

*GENEVA*—Janez Stanovnik, the Yugoslav executive secretary of the UN's Economic Commission for Europe (ECE), has pledged that the organization will give environment a prominent place in future activities. The pledge was in the report for the annual session here of the 34-member ECE Commission, March 30 to April 10.

Stanovnik urged that ECE programs should be adapted to seize new opportunities for intra-European cooperation in the wake of the Helsinki Agreement. In relation to environment, he said ECE activities should be guided by the need to integrate science and technology in economic policies; make environmental improvement an essential element of economic planning, programming and policies; assure an international infrastructure in the fields of transport, energy, and basic materials; increase efficiency and eliminate waste in the use of energy.

Stanovnik called for the preparation of environmental perspectives and referred to the Helsinki proposal for an ECE study of national capacities to predict environmental consequences of economic and technological development. An existing ECE program recommended for expansion is a program for monitoring and evaluating long-range transport of air pollutants.

Land use could become a major interdisciplinary and inter-sectoral activity for ECE, Stanovnik said, involving subsidiary bodies dealing with environment, economic planning, agriculture, timber, chemicals, transport, coal, electric power, gas, human settlements and water.

The report claimed ECE's program is well-balanced on the question of water pollution control on the one hand and water use and supply on the other, but says cooperation could be greater on medium and long-term perspectives for the water economy as a whole.

*WILLIAM G. MAHONEY*



## Ocean Dumping: Global Concern Leads to Action on Many Fronts

**BRUSSELS**—A number of efforts are underway at both the European and international level to come to grips with the increasing problem of harmful substances dumped at sea.

In recent months there have been conferences aimed at the Mediterranean area, dumping throughout the world, and the imposition of liability for oil pollution. And the European Common Market has just introduced legislation that could lead to a system of licenses for some dumping and outright prohibition in other cases.

An example of the global approach was the recent meeting of more than 130 representatives of nearly 100 countries in London in connection with the London Dumping Convention of 1972, which 20 states have so far ratified. This meeting was the first by the states backing the Convention and was attended by others who plan to participate. A permanent international secretariat is being established in London, and the first consultative meeting under the Convention is expected to be held in the second half of 1976. A specific proposal was introduced by Britain and Mexico to place the secretariat within the 20-year old Inter-Governmental Maritime Consultative Organization, which has 92 member countries.

Another London meeting late last year sought to deal with the emerging problem of North Sea oil pollution. Although since 1957, 48 states have ratified a Convention prohibiting dumping oil or oil mixtures within 100 miles of the coastline, officials estimate that some 1,000 ships, including 500 oil tankers, pass each day through the English Channel and dump some 300,000 tons of oil products there each year. In addition, there is pollution from land-based sources. Now on top of this is the growing threat posed by the new oil fields.

Nine European countries met in London to discuss a Convention on the liability of oil companies for damage caused by pollution from their operations. Sources attending the meeting said agreement had been reached on 90 per cent of the contents but that another meeting early in 1976 would continue the discussions. Among the unresolved issues were whether the firms should be liable for pollution resulting from terrorist attacks and if they should be liable for an unlimited amount. A ceiling of \$25 million for each incident was suggested. Additional studies were also to be undertaken on the evaluation of damage, the most likely locations for pollution and the ability of the insurance industry to cope with such liability.

The Common Market commission in January introduced legislation that would set up a uniform code of limitations on dumping in territorial waters or by ships or planes flying the flag of any of the nine member states. Only a few of the EEC countries have ratified the international dumping treaties and consequently laws and standards vary from country to country. The Commission proposed a code to be considered by

ministers from the member countries that would prohibit the dumping of some substances, allow the disposal of others under licensing and leave it to the states to implement the regulations. Among the substances banned would be mercury and mercury compounds, cadmium and cadmium compounds, persistent plastics and other persistent synthetic materials, crude oil and hydrocarbons of petroleum origin, radioactive wastes and products unsuitable for dumping, and acids and alkalis from titanium and aluminum industries.

As if to underscore the problem, a pair of recent environmental controversies in France have involved dumping "red" or "yellow" mud in nearby waters. In one case, plants belonging to the chemical firms Rhone-Poulenc and Azote-Produits Chimique were allowed to resume dumping of phosphogypse products off Le Havre. Barges transporting such products had been seized and halted by a lower court after complaints by local residents, industries and fishermen that they had produced "yellow mud" containing lead, cadmium and mercury suspected of being harmful. The dumping will now have to take place further out to sea and the firms have received governmental financial assistance to seek alternate means of disposal.

At the other end of France, the latest chapter in a lengthy controversy over "red mud" unfolded recently when the Italian firm Montedison continued to dump chemical products in the waters near Corsica although it had promised to cease by the end of 1975. In the meantime, the trial of five company officials scheduled for January 14 was postponed until March 24, and the Italian Senate adopted a proposition legalizing such dumping until international regulations, such as those proposed by the Common Market, are approved. French authorities are expected to continue pushing for remedies from the Italians in the near future. DAVID FOUQUET

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### Nuclear Fuels (continued from p. 2):

One of the partners in this tripartite undertaking—British Nuclear Fuels Ltd.—has also recently been the subject of considerable attention and controversy in Britain as a result of its recent shipments of fuel from Japanese plants for eventual reprocessing at the Windscale site. A national debate has centered on the wisdom and safety of this type of undertaking, which the firm says may represent some \$1 billion in contracts over the next 25 years. More than that amount is also being considered for the expansion of the Windscale site.

At the same time, controversy in France has flared up over the waste from the Grenoble Nuclear Research Center. Unions and environmental groups in that city have expressed concern about the waste water from the Center's facilities and also from an experimental reactor administered by a French-British-German team.



## Briefs...

### Fines Are Levied under Mexican Water Discharge Law

Fines have been imposed for the first time against Mexican industry for failure to comply with a two-year-old federal water pollution law. Two mining companies in the central state of Aguascalientes were fined a total of \$1,840 by the Secretary of Water Resources. Both the San Pedro mine and the Jesus Maria Minerva operation were charged with failing to receive permission to discharge wastes into nearby rivers. Under the law, all firms discharging liquid wastes must register with the secretariat so that it can investigate the quality of the discharge. Some 45,000 companies are so registered.

### Argentina Begins Experimental Hail Control Program

The Argentine Air Force's National Commission on Space Research has devised a pilot hail-control project—the National Program for Combatting Hail—which will depend on lead iodide rockets. Hail is a major problem for Argentine agriculture, particularly for wine grapes but also for fruit, vegetables, grain and cotton. Last month a severe storm over Mendoza, heart of the wine country, destroyed some 5,000 hectares of grapes, with a loss near 200 per cent—that is, a total loss of this year's crop with virtually no chance of the vines producing next year either. Annual grape destruction in Mendoza due to hail runs to 13 per cent or hundreds of millions of dollars.

In the pilot project, 12 rocket pads will be placed within a 50-km radius area in Mendoza. Crop damage inside and outside this 100,000 hectare zone will be assessed over a five-year period. If the program is successful, the Argentines will expand it nationwide. The Soviets claim an 80

per cent success rate with their similar program, on which the Mendoza test is modelled, and the Argentines hope for 50 per cent.

The Argentines opted for rockets to deliver the lead iodides instead of the planes used in North America because the missiles offer the fastest possible response time, a greater precision, and a considerably lower cost. The lead iodide particles, when released in the storm cloud, either change the hail to rain or make the pellets smaller.

Extensive studies of hail are being carried out in preparation for the pilot program.

### Colombia Rules that Investment Must Decentralize

Colombia's planning department has ruled that most new foreign investment must be located in intermediate cities to prevent further population and industrial concentration in the country's three biggest centers—Bogota, Cali and Medellin—where public services are unable to keep pace with the population explosion. The only new investments allowed in these cities must be "clean" nonpolluting factories.

### Soviet Union Launches Cleanup Plan for Black and Azov Seas

Radio Moscow has announced a new government decree demanding pollution control measures for the Black Sea and the Sea of Azov in Southern Russia. The decree calls on the Republics of the Russian Federation, the Ukraine, Byelorussia, Georgia and Moldavia to take measures so that by 1985 no polluted waters from factories or industrial complexes will flow into the two seas. Municipalities are also ordered to stop pollution of tributary rivers by 1980. All ships on these waters must be equipped with waste purification equipment and must off-load all collected wastes and polluted waters

to floating or shore-based receptor facilities. The Ministry of Transport will assure the building by Jan. 1 in Odessa, Milichevsk, Tuapse and Sevastopol of shore-based facilities.

Rulings are also set forth on oil drilling or prospecting in the two seas, covering explosions or other operations that could be harmful to fishing or other living resources.

### Locals Oppose Dam on Austria's Blue Danube

The usual clash between national plans to develop power stations and local economic and touristic interests is being taken a step further in Austria over the plan to build a cofer power dam on the Danube near the place where England's Richard I was held prisoner by the Austrian Archduke during the Crusades.

The dam is planned by the Austrian Danube Power Company at a small town named Rossatz, near Durnstein, where Richard was held. The picturesque country is the center of the Austrian Danube vineyards and a profitable tourist area. Local communities fear a deepening of the river will change its character, bringing sharper winds from the hills to spoil the vineyards, and that a dam will ruin the view. These groups have been fighting the dam for about ten years. Now, they have offered a compromise whereby a fueled power plant would be built instead of the dam. The opponents have also asked the Council of Europe at Strasbourg to declare the area a natural and cultural monument of European rank, which would guarantee environmental protection and stop any scheme to change the landscape.

Four dams have already been built along the Austrian Danube, and nine more, including Rossatz, are said to be needed to generate the required power. Austria is also a party to the 1960 Danube Convention by which the river must be kept navigable for "Europe barges" of 350 tones with a view to trans-Europe navigation when a river-canal link has been established between the Atlantic and the Black Sea.



## Local Groups Try To Save Kyoto's Streetcars

Japanese city planners are discouraged by the decision of authorities in Kyoto to abolish the city's 80-year use of streetcars. The traffic officials claim the streetcars cause traffic jams and operate at a loss.

But Kyoto citizens have launched a movement to save the old streetcars, given the need to economize on energy use, and the fact that other Japanese city administrators now believe they acted too hastily in removing this type of vehicle.

Kyoto officials explain that they have a \$1 million monthly deficit and report that daily passenger volume has fallen from 610,000 to only 150,000 in the past dozen years. All nine lines have an accumulated debt of \$46 million.

The Society for Protection of Kyoto Streetcars has formally petitioned the city to save the system as it now exists, contending that it is safe and pollution-free and uses less energy than a proposed subway. The society argues that prohibiting cars from using the streetcar tracks, as was done in Hiroshima a few years ago, would bring passengers flocking back.

## UNEP Joins Parasite Study

The UN Environment Programme (UNEP) is preparing a project for an environmental approach to the study of parasitic zoonoses, based on a study now begun in Kenya, for worldwide application. UNEP is joining in a Food and Agriculture (FAO) Organization-World Health Organization (WHO) coordinated research program comprising basic and applied laboratory research and environmental and socio-economic studies.

A UNEP team has joined a group of surgeons of the Flying Doctors Service on a tour of the Lodwar District Hospital and the Medical Missionaries of Mary Hospital in Kakuma, Northern Kenya, to be-

come familiarized with certain parasitic diseases that can be transmitted from animals to humans. These include cysticercosis and hydatidosis (infections by tapeworm and larvae). Parasites for these diseases are transferred to humans from animals such as dogs and also through polluted drinking water.

## Chinese Carp Clears Weeds From Italian Waterways

Italian officials have introduced a Chinese carp to canals and reservoirs in northern Italy as a means of clearing away weeds. The weeds grow in over-abundance when nutrient-bearing wastes are dumped in the waterways. Known as the White Amur for the Asian River where it originated, the weed-eating carp is favored as a food fish in the Soviet Union, China, Japan, Taiwan, Indonesia, East Germany, Poland and other countries. When raised in polluted waters, its flesh can have an undesirable taste, but this can be cleared up if the fish spends its last few days in clean water, according to Enrico Gelosi of the Italian Ministry of Agriculture. The White Amur can weigh 20 to 40 pounds, or even up to 100 pounds in warmer water. It eats algae, the roots of water hyacinth and other vegetation.

## Greek Buses Now Run on Better Grade of Diesel Oil

Exhaust pollution from buses in Athens has decreased by 30 per cent since last November, according to George Voyadjis, Greek minister of transport and communications, when a better grade of diesel oil was introduced. Voyadjis had charged that poor quality locally refined diesel oil was responsible for much of the air pollution in Greece's big cities.

Sulphur content of the new oil is 2.5 per cent, down 0.5 per cent from the old oil, and its boiling point is 325°C., compared with 385°C. The minister said the new oil will first be

used by the 4,000 buses in Athens and then progressively extended to other cities. He also disclosed that bus drivers will be trained in driving techniques to reduce exhaust fumes.

In related development, municipal authorities in Athens are involved in a dispute with the Athens police over an area in the center of the city where the police are building their new headquarters. The municipal authorities say the area should be turned into a public park. Major John Papatheodorou says the city is now less than 2 per cent covered by greenery, a figure he considers dangerously low in light of growing air pollution. If the government fails to halt the construction, he adds, he will call for public gatherings to mobilize opposition.

## Indonesian Industrial Park Will Control Wastes

A new industrial estate—Rungkut in the city of Surabaya, East Java,—will, for the first time in Indonesia, be equipped with a channelling and cleansing system for waste waters to prevent pollution. Indonesia's first industrial estate, Pulo Gadung in Jakarta, was planned with a number of conflicting political and economic factors, and industrial pollution control seems to have been lost in the shuffle. A soft drink factory, for example, is next to a sulphuric acid plant, and both depend on the same well water. The Surabaya estate, Indonesia's second, is being coordinated with the help of the West German Government.

## Colombia Code Breakers Fined

Some 7,500 people were fined last year for breaking Colombia's year-old environmental code, according to Julio Carrizosa, director of the country's wildlife service, Inderena. However, he added that the agency's 350 inspectors and forest rangers lack the money and equipment to ensure adequate control of fishing and hunting.



### Japan Adds Five Substances To River Pollution Study

Japan's Environment Agency has added five more substances to the list of those to be studied this year in connection with pollution tests on 12 of the country's major rivers. Addition of the five—vinyl chloride, cobalt, titanium, thallium, and tellurium—brings to 42 the number of substances the agency will cover. Annual studies of the nation's rivers began last year in an attempt to prevent recurrence of serious pollution incidents.

### Experts To Tour Spanish Forests

The UN's Economic Commission for Europe (ECE) will sponsor a study tour of Spanish forests and wood-processing industries May 30 to June 8. The participants, many of whom will be from ECE's Timber Committee, will visit Mediterranean forests in areas of low rainfall, as well as those in humid zones. They will see the poplar plantations of the Vaga del Genil de Granada and areas of *pinus radiata* and eucalyptus in the wetter regions. Visits to sawmills and plants producing particle board, plywood, paper and doors are also in-

cluded and the group will inspect the management of pine forests and development of recreational facilities. In Europe, only Finland and Turkey have larger areas under tree cover than Spain. Of Spain's 14.1 million hectares of forest, some 9.6 million are classified as "exploited"—an area exceeded only by Sweden, Finland and France.

### Smog Is Blamed for Mexico City Power Failure

Smog was blamed for the first major power failure of 1976 in Mexico City. Between 45 and 67 per cent of the capital was affected. While a spokesman for the Light and Power Company cited a short circuit in a substation, something "beyond all technical and human control," the director of the Federal Electricity Commission, Arsenio Farrell, put the blame directly on atmospheric contamination.

Smog accumulated in the insulators of towers of the transmission lines and provoked the short circuit, Farrell said, adding that atmospheric contamination, of which Mexico City has plenty, "has become a factor which costs us work to overcome." It has forced increased maintenance of

electrical equipment, he explained, including periodic washings and protection of insulators with special grease. Farrell said a residue of atmospheric contamination can interrupt the flow of electricity. Usually, power failures occur during the June to October rainy season.

### Chinese Chemical Industry Steps Up Pollution Control

China's growing chemical industry is stepping up its pollution-control measures, according to official reports from northeast Liaoning Province. The reports say that a great reduction in emissions has been achieved from a major chemical plant producing more than 20 different products. Black smoke has been eliminated from 11 of the factory's chimneys, and residual wastes have been reduced from 12,800 tons to 215 tons per year through both treatment and recycling.

The authorities now boast that more than 90 per cent of the pollution from the factory has been eliminated, at a total cost of \$1 million. The Liaoning plant is being hailed as a model for other Chinese chemical plants to emulate.

## Calendar...

**March**—Second African Meeting on Energy. Ghana. Sponsored by the United Nations Economic Commission for Africa (ECA).

**March 15-19**—International Symposium on the Development of Nuclear-Based Techniques for the Measurement, Detection and Control of Environmental Pollutants. Vienna. Sponsored by the International Atomic Energy Agency.

**March 15-19**—Executive Committee Panel of Experts on Climatic Change. Geneva. Sponsored by the World Health Organization (WHO).

**March 22-29**—International Symposium on the Management of Radioactive Wastes from the Nuclear Fuel Cycle. Vienna. Sponsored by the International Atomic Energy Agency.

**March 23-24**—Ministers from most European countries will meet in Brussels to discuss major environmental themes and action that can be taken at the broad European level.

**March 30-April 14**—Governing Council, Fourth Session. Nairobi. United Nations Environment Programme.

**April 5-9**—International conference on the environment of human settlements. Brussels. Sponsored by World Environment Resources Council in preparation for Habitat.

**April 20-22**—Seminar on Technologies of the Utilization of Low-Calorie Fuels. Zlatni Piasatzi, near Varna, Bulgaria. Sponsored by the United Nations Economic Commission for Europe (ECE).

**April 26-29**—International Conference on Air Pollution. Pretoria, South Africa. Sponsored by the Department of Health of the Republic of South Africa.

**May 16-20**—Fifth World Symposium on Water Desalination. Alghero, Italy. Sponsored by the International Federation of Chemical Engineers. Chairman is Prof. Anthony Delyannis of Athens Polytechnic.

**May 17-22**—International seminar on long-term water management planning. Zlatni Piasatzi, Bulgaria. Sponsored by the UN Economic Commission for Europe (ECE).

**May 27-June 9**—World Environment Exhibition. Tokyo. Sponsored by the Japan Productivity Center and Nihon Keizai Shimbun.

**May 31**—Inter-Secretariat Meeting on Water Pollution. Geneva. UN Economic Commission for Europe.

**May 31—June 11**—Habitat 76. Vancouver, British Columbia. Sponsored by the United Nations.





# World Environment Report

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## The Mediterranean: Twelve Countries Sign Historic Convention

**BARCELONA**—Twelve Mediterranean nations signed an historic convention here February 16 binding them to cooperate in “all appropriate measures to prevent and abate pollution” in their common sea. Three others agreed to the convention but did not sign immediately for procedural reasons. The same 12 countries also signed a Protocol on Cooperation and the same 12, except for Greece, signed a Dumping Protocol.

Sixteen of the 18 Mediterranean countries—all except Albania and Algeria—attended the two-week meeting, but the Syrian delegation left before the final session. Libya, Yugoslavia and Tunisia signed the minutes, but deferred signing the convention and protocols. The instruments are now being held open in Madrid for further signature. The United Nations Environment Programme (UNEP) was the sponsor of the meeting.

Mostafa Tolba, UNEP's executive director, hailed the agreements and told the delegates “I do not think you achieved your results simply because you were ‘united by pollution.’ You have clearly proved to the whole world that your governments are committed to a humane cause, to ensuring development of the area while at the same time safeguarding its resources for the prosperity of generations to come. By any measure, your conference is a great success. . . a turning point in the fight to halt the continued deterioration of the environment of the Mediterranean Sea.”

The accord has wider implications than just the terms set forth by the treaty because it commits historic enemies to future cooperation and consultations. Israel agreed to the terms, along with Lebanon, Egypt, Libya, Tunisia and Morocco. Greece, Turkey and Cyprus are signatories. The other states actually signing the convention and protocols were Spain, France, Monaco, Italy, and Malta.

Signatories undertook the commitment to reduce and prevent pollution from all major sources. Two supporting protocols spell out the appropriate measures to be taken in cases of dumping and pollution emergencies. The first protocol prohibits dumping of such substances as DDT, PCB, crude oil and other petroleum hydrocarbons, mercury and cadmium, persistent plastics and radioactive wastes and imposes stringent conditions on

the dumping of such materials as lead, copper, arsenic and fluorides.

The protocol dealing with emergencies caused by dumping commits nations to cooperate in dealing with accidents or the build-up of harmful substances that threaten the marine environment. These could involve spillages or dangerous accumulations. A good example would be oil slicks. A nation receiving a report of a large oil slick moving in a certain direction would be obliged to inform neighboring nations that might be involved of its size, direction and speed of movement, as well as taking steps to clean it up if the slick fell within its area. For cases where such states would not have diplomatic relations and would be reluctant to contact each other, a neutral center will be established where such reports could be made and passed on.

To permit this, the 16 countries selected Malta to be the headquarters for the joint drive against oil pollution. They unanimously agreed to set up a regional center on the island of Manoel, off the Maltese coast between Valletta and Sliema. They agreed to set up a fund of \$1.7 million to develop and operate the center over the next five years.

UNEP program coordinator Stjepan Keckes, a Yugoslav marine ecologist, told participants that the Mediterranean is generally a clean sea but that “certain areas are in a sad condition and this is where our efforts must be concentrated.” He commented that the Ligurian coast, which runs from Barcelona along France's Mediterranean coast as far as Genoa in Northern Italy, and the Adriatic coast from Venice across to the Northern

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Yugoslav town of Pola, are especially badly polluted.

Mr. Keckes said that both coasts are contaminated by untreated sewage, industrial waste, pesticides and manure washed off the land. He noted that similar pollution problems exist in the vicinity of all large Mediterranean cities such as Naples, Haifa and Alexandria.

A major political argument developed during the debates over the right of the Common Market to sign the framework convention and the two protocols. This was resolved with a wording that extends the right of adherence to "all regional economic groups which have at least one member state bordering the Mediterranean Sea and which exercise competences in the areas covered by the present convention as well as those covered by all protocols."

Following the Barcelona meeting, Peter Thacher, who is head of UNEP's Geneva liaison office and was acting Secretary General for the meeting, visited New York and was interviewed by *World Environment Report*.

What is really significant about Barcelona Two, Thacher told *WER*, is that in a remarkably short period of time the governments not only agreed, but also signed three legal instruments relating to the Mediterranean. There is normally a pause of weeks or even months between agreement on the text of such documents and opening them for signature, he said. If the process of ratification is carried out at the same accelerated pace as expected, he said, then the three instruments should be in effect by 1978.

It is clear from the resolutions passed at Barcelona Two and at last year's Barcelona One, Thacher told *WER*, that the governments "envisage full speed ahead on putting the agreements into effect without waiting for formal ratification." The governments asked UNEP to proceed with work on the next protocol, which will deal with land-based pollution.

The legal documents form only one chapter of the Mediterranean program, Thacher pointed out. On the scientific chapter, the seven research and monitoring networks agreed to at Barcelona One are well on the way to being organized, with several of them already organized. All of them will be operational in the near future. Some 30 national institutes have been committed by their governments to work on this program, and 80 more have been involved in the process. In six months, there will be a mid-term evaluation of the seven projects.

On the economic chapter, Thacher went on, there has already been one meeting of experts on the so-called "Blue Plan" for development, and there will be another in Geneva beginning March 8, out of which should come proposals to be presented to the governments at a May meeting. This will lead to a two to three-year phased series of "very intensive study programs by institutions around the Mediterranean."

In the first phase, he added, the studies will look at the present development situation and try to identify trends to the end of the century in such areas as urbanization, industrialization, transportation, tourism and agricul-

ture. The second phase will look at the impact on the Mediterranean region of these trends. In the third phase, all this information will become available on a continuous basis for the development planner and national decision maker.

The end result is that, at about the time the treaty comes into effect, the governments will be receiving the kind of scientific data they need to make decisions about the nature and course of development in the region, as well as far better evaluation of the costs and benefits of their decisions.

Thacher believes the results of Barcelona show that the governments are prepared to allocate the resources needed to clean up existing pollution through construction of adequate sewer systems and treatment plants and to apply cleanup standards to their industries. This commitment exists down to the municipal government level, Thacher said. There are some disagreements among the states on the damage caused by certain compounds, he noted, for example, the disagreement between France and Italy on titanium oxides (*WER*, Feb. 16, 1976, p.5), which is expected to be resolved by Common Market action.

"But it's very clear the will is there," Thacher said. He cited the fact that, although Italy is without a government, it still found a constitutional way to sign the treaty. And France overcame administrative regulations that normally would prevent it from signing a treaty without a pause between the negotiations and signature, and sent Andre Fosset, its new Minister for the Quality of Life to Barcelona to sign the documents.

WILLIAM G. MAHONEY, JRM

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## Hong Kong: Growing Awareness Spurs Environment Programs

*HONG KONG*—There are few places in Asia that have reacted so quickly to the problems of pollution as Hong Kong. For many years, little notice was taken of the environmental issues, although the population and the industrial activity of the colony were increasing at a great pace. But in recent months there has been a mounting awareness of the potential dangers that unplanned and unrestricted growth can cause.

An Environmental Secretariat has been formed within the Government, plus an Advisory Committee on Environmental Pollution, with separate units dealing with air, water, land and noise pollution. Present legislation is acknowledged by the Government to be inadequate, with fines low and only limited powers for prosecution of offenders. But all that will change in 1976. A special environmental consultancy group has advised the Government to enact new legislation, and to take a much tougher stand on the environmental issue. There has also been a growing public consciousness of the need for wider-ranging measures.

Most of the difficulties are caused by having too many people on too small an area. The colony has a population of 4.5 million on an area of under 400 square miles—with most people crowded onto Hong Kong island and the Kowloon peninsula. Industry for the main part is limited to these areas, with an estimated 73% of it located on 6% of the land area. Both of these factors cause widespread environmental problems, in terms of the disposal of waste, and air and noise pollution.

Most of the human waste goes into the seas around Hong Kong, much of it untreated. Environmentalists now say that the coliform levels in the waters in many areas are far too high. The Government hopes to provide an increasing number of treatment plants to deal with this situation, though their number is likely to be inadequate for a number of years.

A special marine pollution unit has been set up which has done a lot to at least contain the pollution levels in Hong Kong waters. The unit is especially active within the harbor, where regular pollution checks are made on shipping and a refuse collection service is operated. The unit has a number of boats, many with special equipment for dealing with oil slicks and other forms of sea pollution.

New legislation to deal with air pollution came into operation last year, and already the pollution levels have dropped. Much of the drop is attributed to the activities of a special mobile air pollution unit which monitors pollution levels in the industrial areas, and in many cases brings action against offenders.

The Government is now giving particular attention to the potential pollution problems that would be caused if new industries, such as chemicals, begin operation in the colony. Many environmentalists have said that such industries should not be allowed.

A lot of emphasis is put on campaigns to increase

public awareness. In 1975 there were three Government-sponsored campaigns—against littering, noise pollution and excessive exhaust emissions. Tougher fines on offenders have been called for, and new legislation should be brought in this year.

Particular concern is given to noise pollution, which is aggravated by the density of the population. Pile driving on construction sites is now prohibited at night, but there is a great deal of lobbying at the moment to extend this to cover more of the evening hours. Night time flying is prohibited, but noise from jets is still a big problem, with the airport located very close to residential areas.

But unlike many other parts of Asia, there is action on the environmental front in Hong Kong. Though tackling the various pollution problems has only just started, hopes are high that the environmental movement will gain momentum in the years ahead.

ARTHUR C. MILLER

## Colombia Forest Project Seen As Model for Latin America

*BOGOTA*—The Colombian government has embarked on an ambitious project that will serve as a pilot program for Latin America.

Under the auspices of the Colombian wildlife service Inderena and the newly created National Corporation of Forest Investigations (Conif), millions of trees will be planted in the western departments (states) of Choco, Antioquia, Cauca, Valle and Narino to save the tropical forests which represent 85 per cent of the country's forest reserves. As a result of this initiative, Colombia is likely to be appointed one of the United Nations' advisors on the management and conservation of the world's tropical forests.

The first phase of the project has already begun with a reforestation program covering 2,500 acres with laurel trees in Narino and Choco in the extreme southwestern and northwestern parts of the country.

Conif also has organized a forest information service based on 4,000 documents in 52 Colombian libraries and a network for forest investigations including universities and the 18 lumber companies belonging to the semi-autonomous corporation. (Inderena also is a member of Conif.) Pacific coast companies have agreed to reforest the mangrove swamps they are exploiting.

The second, most important part of the reforestation project provides for the planting of 175,000 acres with 300 million pines, cypresses and eucalyptuses in Antioquia Department. The World Bank agreed to share the cost of the \$384 million program with the Colombian government.

Some 10,200 Colombians will be employed in the reforestation of a 46-mi. belt around Medellin, An-



tioquia's capital and the headquarters of the Colombian textile industry. Small land parcels of 125 acres or less will be rented for reforestation while larger farms and ranches will receive low interest loans for reforestation. Sixty-five per cent of the trees will be pines; 30 per cent cypresses; and 5 per cent eucalyptuses.

On the World Bank's advice the Antioquia project has been expanded to include the departments of Cauca and Valle, which recently formed local forestation commissions to plant 150,000 acres. The Cauca project is sponsored by the Colombian subsidiary of Carton Industries, Inderena and local financial and development agencies. The National Federation of Coffee Growers is working with state authorities and private capital on the Valle project.

The decision to reforest western Colombia, where most of the lumber operations are located, is none too soon. Colombians are deforesting their country at the rate of 2.5 million acres per year. Without reforestation programs, Conif predicts that 80 per cent of the country's 80 million acres of commercially exploitable forests will be exhausted in 25 years.

PENNY LERNOUX

## Massive River Diversion Will Change Sri Lanka's Landscape

*COLOMBO, Sri Lanka*—Prime Minister Sirima Bandaranaike has commissioned the first stage of the Mahaweli diversion scheme, which will send the waters of Sri Lanka's longest river—the 206-mile Mahaweli—toward the island's dry zone to bring new life.

The government describes the project as "the largest development conceived, or indeed conceivable" in Sri Lanka. It will cost an eventual \$1.3 billion by its completion, scheduled by the end of the century. A 1968 estimate of \$1.1 billion has been upwardly revised because of inflation and increased oil prices.

The river diversion is a massive, multipurpose development project providing irrigation for planned agriculture, water supply for domestic use, hydro power for industry and new land for agricultural settlement. Its magnitude and importance may be gauged by a single statistic—the Mahaweli diversion will irrigate 900,000 acres of land; the total irrigated today is 925,000 acres.

The master plan for the project was drawn up by the UN Development Program (UNDP). This plan calls for a three-phase construction, each phase further divided into different projects, allowing autonomous planning, financing and construction.

The initial stage, now nearly complete, is pivotal to the whole diversion. It involved the construction of one of the country's largest irrigation structures—a diversion dam 40 feet high and 500 feet long across the Mahaweli at Polgolla in central Sri Lanka and the digging of a 5-mile-long, 19½-foot tunnel below the tea- and spice-covered slopes of the island's central hills.

The tunnel intake is in the 300-acre lake created on the

river by the Polgolla dam. This tunnel discharges at Ukuwela in the adjacent Amban Ganga river basin across the hills. It is this tunnel flow—the first trans-basin conveyance of the Mahaweli water—that Mrs. Bandaranaike commissioned.

For the peasant farmer in the dry zone district of Polonnaruwa this already means an assured double crop. Furthermore, the diverted water will also turn the turbines at the Ukwela power house, now nearing completion, which will feed 202 million KWH annually to the national grid.

The waters are discharged into the natural channel of another river, the Dhun Oya, which has been straightened, widened, desilted and stabilized to cope with the increased flow. The Dhun Oya carries the water to the Amban Ganga, the most important tributary of the Mahaweli, which also plays a vital role in the diversion.

Work on a high dam (100 feet tall and 740 feet long) across the Amban Ganga is nearing completion. A 4-mile-long 13-foot tunnel, which will carry the waters from the Bowatenne dam to a centuries-old complex of dry zone "tanks" (agricultural reservoirs built by the Sinhalese kings), is due to be commissioned this month. This will mean that 134,000 acres of existing fields can be double cropped and 6,000 acres of new land brought under the plow within the next few weeks. Farmers have already been settled on the new land.

The total cost of the first stage of the first phase, which consists of the Polgolla and Bowatenne complexes, will be around \$50 million. The World Bank financed the foreign cost of stage 1 with a loan of \$29 million. Work on stage 2 has already begun and negotiations are proceeding with the International Bank for Reconstruction and Development for the foreign component of this work.

MANIK de SILVA

## WWF Launches Save-Forest Drive

*GENEVA*—The World Wildlife Fund (WWF) last month announced an international campaign to save the world's forests. The campaign is aimed specially at the tropical rain forests. WWF hopes to collect enough money from its 24 member countries to finance 30 projects throughout the world, chiefly the establishment of national parks in tropical rain forests.

Philippe Roch, WWF president, called the forest situation "catastrophic," declaring that in 1950 there were 16 million sq. km. of forests, but that 40 per cent had disappeared by 1970, "causing famine, drought, floods and erosion." He added that each year some 11 million hectares of forest are levelled.

The major enemy of forests, he said, is the intensive expansion of agriculture in Africa, Southeast Asia and South America. Timber-related industries in the more industrial countries share the blame, he added.

WWF is conducting a contest, called "SOS Forests." It involves the sale of 2 franc (Swiss) stamps.



## Austria: Thirty-Year Program Seeks Clean Rivers and Streams

VIENNA—The \$51 million that Austria is spending on improving the quality of its river waters (*WER*, Feb. 2, p.6) is part of a long effort to clean up the rivers and streams of this Alpine and Danube land.

The effort began following a typhoid scare in 1945-46 when an epidemic took a number of lives in the town of Hartberg. Between then and 1959, the government spent about \$47 million on improved sewage control and water purification. In 1959, Austria set up its first federal fund to support municipal and district efforts for water control and improvement. Since then there have been increasing budget allotments for these purposes.

In 1970, the government included air pollution in its environmental policy, and three ministries—Health, Buildings and Agriculture—were made jointly responsible, with Buildings controlling the water program and Health coordinating the program. The government invested a further \$460 million, which doubled the value of water control works being constructed. In 1973, \$100 million more was invested. The recent decision to spend \$51 million brings Austrian spending on environmental protection, especially water improvement, to nearly \$660 million in the 30 post-war years, almost all since the Second Republic came into being in 1956.

By 1980, two major installations—fully modern sewage and industrial outflow control at Vienna and Linz—are scheduled to be completed. Austria's dirtiest river, the Mur, which flows southeast into Yugoslavia carrying wastes from many paper mills and the steel works of Voest-Alpine is being cleaned. The industries are being required to control their outflows by recycling, some for reuse and the remainder for fertilizer.

While rural municipalities are not always quick to use the federal funds available for water improvements, the federal government has considerable authority in the

matter, far more than neighboring West Germany, where most authority lies with state governments.

In Austria, the paper industry is the top industrial polluter, followed by chemicals and then stone and ceramic works. Lignite mines and steel mills are the next, others being food industries and the oil fields near Vienna. All are required to spend heavily on recycling and other water purity measures. Between 1970 and 1980, the cost to industry of environmental protection is projected to be \$1 billion, about half to keep river waters clean and another third for air pollution control. Industrial waste disposal will cost about \$100 million.

The Danube passes through eight countries, each of which watches the entering quality with care. Austria complains about the flow from Germany; Hungary complains about the flow from Austria and is watching closely Vienna's sewage program. The East European states on the Danube stress the desirability of establishing an international Danube Commission. But, because the East Europeans would have a five-to-three majority, the idea is resisted by West Germany and Austria.

EDWIN BROOK

## U.S. and Soviets Demand a Ban On Environmental Warfare

GENEVA—The United States and the Soviet Union joined here last month in demanding that delegates from the 30 nations at the Geneva Disarmament Conference reach agreement on a ban against environmental warfare.

Their demand was backed at the reopening session of the conference by United Nations Secretary General Kurt Waldheim, who said that there were "reasonable hopes" of reaching such an objective.

Chief delegates Joseph Martin of the United States and Alexei Roshchin of the Soviet Union last year tabled jointly a draft text of such a treaty.

This would forbid states from tampering with the environment or striking at enemies with man-made storms, tidal waves, earthquakes or similar environmental disturbances.

Martin and Roshchin declared Feb. 17th that they hoped for progress on the accord so that the Conference would be able to submit a final draft to the UN General Assembly session opening this fall.

"There is a consensus that it is desirable to develop a multilateral convention to spare mankind from the potential dangers of environmental warfare," Martin declared. "The task now before the conference is to determine how this objective can best be achieved."

Roschin said that the solution of this problem is less complicated now than it would be if environmental modification techniques became more developed and were adopted by states as means of warfare.

## Nature Reserves Set for Scotland

LONDON—Three new nature reserves, totalling 11,000 acres, have been established in Scotland by the government's Nature Conservancy Council, bringing the number of reserves in Britain to 146, with 296,000 acres.

Largest of the new reserves is Ben Lawers near Perth, where 7,710 acres have been added to 1,142 established in 1964. The enlarged reserve will be managed jointly with the National Trust for Scotland. It is an area famous for plant life. The Cairnmore of Fleet reserve near Dumfries is 3,248 acres bought by the NCC as an example of unplanted upland area with golden eagles, peregrines, ravens, mountain hare, red deer and wild goat.

The Keen of Hamar reserve in Shetland is only 75 acres of remote, stony hillside. The serpentine rock with scant soil cover supports certain rare plants such as moss campion, northern rockcress and Edmonston's chickweed.



## Briefs...

### Bulgarians Discuss Greater Pollution Control Measures

Hungarian and Bulgarian environmental officials met last month in Budapest to discuss greater cooperation in pollution control. Nikolai Georgiev, deputy chairman of the National Council of the Bulgarian Fatherland Front and chairman of the All-National Committee of Environment Protection, met with Gyulai Kallai, president of the Hungarian Patriotic People's Front, and Istvan Szabd, chairman of the Central Union of Agricultural Production Cooperatives.

After the meeting, Georgiev described for the press the care taken by the Bulgarian government and people to protect natural resources. At the same time, an environmental protection exhibition was opened in the Bulgarian Cultural Center in Budapest.

In Sofia, the Bulgarian capital, officials have pushed ahead with the registration of cultural monuments, according to the national news agency, BTA. About 12,000 monuments have already been registered, and a monographic description has been compiled of nearly 20,000 monuments and 46 town ensembles, according to BTA. Documentation has also been filed for 20 monasteries. BTA said the theory and practice of restoration for monuments has been worked out, and most valuable portable items have been deposited in institutions or museums. All buildings, no matter who owns them, are subject to restoration at the expense of the state, BTA notes, while the property rights have been preserved.

Despite this progress, however, Radio Sofia said last month that there are still many cases of air, water and soil pollution in Bulgaria. Cement factories are polluting the air, chemical plants the water and construction of factories and roads is polluting the fertile soil, according to the commentator. The radio said it is

the duty of all managers of firms, mines and farms, as well as all citizens, to protect and enrich Bulgaria's environment. The radio reported that Communist Party Politburo member Pencho Kubadin-ski called for better coordination of the activities of the Bulgarian Committee for Environment Protection and the state bodies in a Feb. 6 speech to the committee.

### Indonesian Paper Mill Studies Use of Sugar and Rice Wastes

PN Leces, a papermill in Probolinggo, East Java, is studying the possibility of using sugarcane wastes from the country's numerous plantations to improve its products. With the help of research and training institutes, the plant is also studying the use of rice straw and stubble in making such products as writing or printing paper, wrapping paper and notebooks.

The mill is expected to reach a capacity of 15,000 tons per year during 1976, and plans are to expand this capacity fivefold by 1983.

### Legal Aid to Environmental Groups Tested in Australia

Australia's policy of legal aid to citizens' groups is being tested as the federal government considers an application from a West Australian environmental group for help in challenging a woodchipping project.

In the first such request in Australia, the South-West Forests Defense Foundation has filed its application with the Perth office of the government's Legal Aid. The group seeks help in winning an injunction to stop the woodchipping project, which has a contract to sell 750,000 metric tons of chips per year to Japan for 15 years. The operation is in the hardwood forest near the town of Manjimup about 200 miles southwest of Perth.

The foundation is also seeking backing for an alternative High

Court action to halt the venture on constitutional grounds.

The \$15 million venture has been approved by the State Environmental Protection Authority and Forest Department, and it includes elaborate safeguards aimed at avoiding lasting damage to the forest or water courses in the area. However, the foundation and other environmental groups are not convinced the safeguards and monitoring programs are adequate.

Western Australia's Premier, Sir Charles Court, has asked the federal government to withhold its financial backing for what he calls "amateur" environment lobbyists.

### Haitian President Appeals for Less Dependence on Charcoal

Haiti's president Jean-Claude Duvalier has appealed to the people to use less charcoal made from scarce timber and to switch to charcoal briquettes made from pressed hardwood scraps. However, local observers point out that the lone, tiny plant in Port-au-Prince making these briquettes could not begin to cope with the demand if Haitians comply with the president's request.

Charcoal is the traditional cooking fuel for millions of Haitians. The cutting of thousands of board feet daily to satisfy this insatiable demand has led forestry experts to predict that Haiti will be treeless within 15 years. Cover has been slashed as much as 50 per cent in the last four years alone, as the population booms. Over the last ten years, signs of permanent ecological damage have appeared. Once verdant mountains are dusty and bare, their slopes unable to hold the rainfall. This means massive erosion, flash floods, crop damage, washed-out roads and water shortage. Once self-sufficient areas can no longer support their needs and international organizations are feeding hundreds of thousands of Haitians in the drought-hit northwest.



### Karachi's Vehicles Are Polluters

Nearly 70 per cent of the vehicles on the streets of Karachi, Pakistan's largest city, emit dangerous levels of carbon monoxide, according to K. Obaidur Rahman, deputy inspector general of police. The government has ordered prosecution of the owners of such vehicles, but there are no approved garages in the city to repair them to modern standards. Rahman has suggested the government establish licensed garages with fixed fees for testing and repairing vehicles to relieve the load on the city's handful of motor vehicle inspectors.

### Colombia Tells Cement Plant To Clean Up Emissions

The Colombian Ministry of Health has denied Cementos del Caribe, a large cement company in Barranquilla, a clean bill of health because of its dust emissions. Cementos has been given 18 months to reduce its emissions from an estimated 141 tons per day to 36 tons on a daily production of 2,500 tons. The company must also raise its stack heights to 15 feet above the tallest building in a 100-ft. radius. If the company fails to comply, it will be fined \$312 per day.

Cementos is the first large company to be penalized under Colombia's year old environmental code.

### British Plant To Handle Glass In Test Recycling Project

One of Britain's leading glass container manufacturers—Redfearn National Glass—has signed an exclusive contract to take bottles and jars for recycling through its furnaces. The company will pay current market prices for the glass, estimated to be 500 metric tons per year, which will be delivered to its plants under the Oxfam "Wastesaver" scheme organized at Kirklees, Yorkshire.

Redfearn was the first British company to carry out a detailed recycling study, and its report was sent to government officials and environmental groups.

The Wastesaver scheme has a \$20,000 government grant and is testing the readiness of householders to separate their wastes. They are provided with multi-bag holders, and collection is done by a paid staff. Sorting is by volunteers at a local depot. Contracts have also been signed for sale of paper and tinplate, and a market has been found for rags. The local authority at Kirklees has agreed not to start competing collections. So far, the response has been good, and there are plans to involve 30,000 households by the end of this year. Ten per cent of the proceeds will go to the Kirklees authority and the rest to Oxfam's international aid programs.

### Ancient Maltese City Limits Heavy Vehicle Access

The 400-year-old city of Valleta, Malta, has been cleared of heavy vehicles, and most of its streets declared pedestrian precincts. Built by Grand Master Jean de la Vallette following the great siege of 1565 against the Turks, Valleta is an unusual city with narrow streets and steps, an architectural gem, surrounded by bastions built by the Knights of Malta in defence of their Christian stronghold.

Many of the streets were already one way, but heavy vehicles are now also barred. The government has introduced a mini-bus service which sticks mainly to a round-about route, using the major streets at intervals. Trucks and vans may now enter the city only during two hours of the afternoon to load or unload merchandise. During the evening, most streets are closed even to cars. The aim is to protect the old buildings from decay through fumes and smoke and to protect the city's foundations, which are built on Mount Sciberras.

### Pakistan Signs Reforestation Agreement with Food Program

The Government of Pakistan has signed an agreement with the World Food Program for the reforestation of 90,000 acres of hilly tracts at a cost of \$13 million in the Hazara district. Aim of the project is to provide incentives to local farmers to contribute their labor to work of community benefit. The program is an expansion of a pilot project begun in 1972.

The five-year program, which involves 7.5 million man days of work, includes sowing, and transplanting for the reforestation and management of 40,000 acres through control of grazing, reseeding of pastures, planting of forage and shade trees, establishment of ponds, check dams and gully plugs, soil conservation, planting of 1.2 million fruit and nut trees, establishing 204 acres of forest and fruit nurseries, construction of 100 miles of jeep quality road, excavation of 189 miles of irrigation and drinking water ditches and protection of river embankments and channelization of streams.

The World Food Program will provide \$9 million of the cost in the form of foodstuffs, and the Pakistan government will provide the rest.

### Study Charges Poland Favors Progress over Environment

A Polish-born American professor has concluded from a six-month study that the commitment to technological progress in Poland is creating environmental problems. The study was carried out at Oxford University in England. University of Michigan philosophy Professor Henryk Skolimowski said he undertook the study to see if problems related to the rise of technology are the result of a particular political system.

He found the Poland and other East European countries are facing more severe environmental problems



than the West because material progress is part of the official ideology of Marxism. He said that "thus one dare not criticize material progress and economic growth for fear of being ostracized as ideologically subversive." He believes East European countries are repeating the mistakes of the West on the side effects of technology and that Poland is about 15 years behind the West in environmental awareness.

Skolimowski noted that in Cracow beautiful Romanesque churches and the royal castle of Wawel are being eaten away by fumes from steel plants. In order to meet production quotas, he said, such plants often remove or bypass control devices, dumping untreated wastes into the rivers and poisonous emissions into the air. Because industry managers have "the upper hand" and are absorbed in meeting quotas, he charged, ecological, social and human factors are disregarded.

Skolimowski said that awareness is growing in Poland that progress exacts a price, and he said official committees do issue edicts and warnings. However, he added, their authority is inadequate and these activities amount to little more than "environmental lip service."

### Irish Report Advises Against Dublin Bay Refinery

An official report on suitable coastline locations for oil refineries in Ireland has identified 11 sites around the southwest and west coasts, but labels the capital, Dublin, as unacceptable for such an installation. Sites in Counties Sligo, Mayo, Clare, Limerick, Kerry and Cork are listed as suitable in the report, which was prepared by the National Physical Planning Institute, An Foras Forbartha.

The report was released in the midst of a planning inquiry into a refinery proposal for Dublin Bay, which is opposed by environmental groups. The Aquarius Securities Company, whose principals have not

been revealed, is seeking permission for the refinery. The release of the report, and its naming of Dublin as one of the least acceptable locations, is expected to have a major impact on the planning application.

### Colombian Fishing Waters Contaminated by Oil Slick

The coastal waters and beaches of Southern Colombia have been contaminated by a petroleum spill that occurred February 6 when a Libyan flag tanker caught fire and sank with 36,000 tons of petroleum 20 miles off the coast of the Colombian-Ecuadorian frontier. Despite an urgent call to the International Maritime Consultative Organization and the U.S. Coast Guard, it has been impossible for Colombia to prevent the 15-by-3-mile slick from moving northeast into the rich fishing waters of the Pacific port of Tumaco.

The beaches and islands of Bocagrande, El Morro, Cabo Manglares, El Rosario and El Gallo have been contaminated, and fishing companies in Tumaco have been forced to suspend processing. Local authorities point out that 90 per cent of Tumaco's economy depends on fishing.

Tumaco is the site of a large shrimp breeding farm and its waters provide most of the catch of the fishing fleet in Buenaventura to the north. Buenaventura is the largest port on the Colombian Pacific and headquarters of the country's marine fishing.

### 'Singapore Connection' Charged In Illegal Wildlife Trade

Singapore is at the center of a significant controversy over the export of protected wildlife species from Southeast Asia. A London-based environmental group — the International Society for the Protection of Animals (ISPA)—claims that endangered species, such as orangutans, gibbons and siamangs, are being imported into Singapore from

Indonesia and then re-exported, mainly to the U.S. A U.S. group—the International Primate Protection League (IPPL)—has also criticized the Singapore authorities, saying it will propose a tourist boycott unless there is action to stop the trade.

The Singapore government denies the charges, saying that it keeps a stringent check on all animals passing through its territory. But the IPPL insists the trade goes on, with high profits for its organizers. The black market price for a rare orangutan is more than \$5,000, according to IPPL.

More recently, animal protection groups in Thailand have also said that there is a "Singapore Connection" in the smuggling of protected species of Thai animals and the export of them to the U.S. The groups say Singapore issues export permits regardless of whether the animals are protected or not. One pet farm owner in Singapore reports that he receives a truckload of such animals each week from both Thailand and Indonesia.

### Mexico's Border Towns Warned To Clean Up Rio Grande

Mexican cities along some 500 km. of the Rio Grande, the river which forms the boundary with the U.S., have been warned to search for ways to avoid further contamination of the river or to face "severe sanctions." Industries in these cities, starting at Piedras Negras and continuing eastward to the Gulf of Mexico, have received a similar warning from Porfirio Munoz Candelaria, regional commissioner of irrigation for the federal Secretariat of Water Resources.

The commissioner, who is conducting detailed studies of Rio Grande contamination, blamed industrial waste and discharges from the cities of Piedras Negras, Nuevo Laredo, Mier, Miguel Aleman, Reynosa, Camargo, Matamoros "and others" for the situation. The cities have a combined population of some 500,000 persons.





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## U.S. Contribution to UNEP Fund Will Again Fall Short of Pledge

WASHINGTON—United States contributions to the United Nations Environment Fund continue to fall far short of this country's original pledge of \$40 million for the five-year period 1973-77. On March 4, the House of Representatives passed a foreign aid bill presented by its Appropriations Committee which included only \$5 million for the fund for Fiscal 1976, which ends Sept. 30. This is the same amount as was appropriated for Fiscal 1975. President Ford had requested \$7.5 million for Fiscal 1976.

The Fund contribution is now part of a package being considered by Senator Inyoue's subcommittee of the Senate Appropriations Committee, and it is conceivable that some of the Administration request could be restored. However, Washington observers familiar with the fortunes of such international agencies consider this unlikely, pointing out that the Fund has not generated strong support in the State Department or among environmental groups.

The House Appropriations Committee's Foreign Operations subcommittee, which is headed by Otto Passman (D, La.), has taken the position that the Fund, administered by the UN Environment Programme (UNEP), has failed to spend the funds it has received already and therefore doesn't need the full U.S. pledge.

UNEP officials insist, however, that this situation has turned around. R. Bruce Stedman, who heads the Fund's operations, told *World Environment Report* in a recent interview (*WER*, Jan. 5, 1976, p. 5) that the pace of expenditure is increasing (\$4 million in 1974, \$10 million in 1975, an expected \$30 million in 1976) and that the lag time is rapidly disappearing.

An even more disastrous development, from UNEP's point of view, is that the White House request for Fiscal 1977, which begins Oct. 1, includes only \$5 million for the Environment Fund. This reflects across-the-board cuts made to achieve President Ford's goal of a \$30 billion budget cut. It is likely, Washington observers believe, that Passman will try to cut this even further.

An ironical aspect of this issue is that the U.S., in a speech by President Nixon, suggested creation of the Environment Fund in the first place. It now appears that the total U.S. contribution for the five-year period will not be much more than half the original \$40 million pledge, a fact not likely to encourage other nations. JRM

## Participants Are Optimistic as Law of the Sea Talks Reconvene

NEW YORK—The United Nations Law of the Sea Conference reconvenes here this week amid strong feelings that most delegations are at last ready to begin serious negotiations leading to an international convention on this complex and controversial issue. The increasing threat of unilateral action—e.g., the pending U.S. legislation on the 200 mile limit and similar actions by Canada and Mexico—has apparently driven home the fact that the nations cannot debate indefinitely.

Last year's session in Geneva produced a Single Negotiating Text that is to form the basis for this year's deliberations. This means that the delegates will have a single working document, rather than a number of proposals by individual nations. The single text was prepared by the chairmen of the conference's three committees—(1) Exploitation/Exploration, (2) Legal and (3) Environment and Scientific Research—and was not given to the delegates until the adjournment of the Geneva session. The idea was to forestall immediate debate and amendments in hopes that the governments would study the text carefully for this session.

The Third Committee (Environmental Preservation, Marine Scientific Research and Transfer of Technology) has made a good deal of progress toward agreement, according to Ismat Steiner of the Law of the Sea Secretariat, through a series of informal meetings held since Geneva by the so-called Evensen Group. This is a non-official gathering of several states from all geographical regions organized by the Norwegian minister.

There is general agreement on the first 15 articles of the Third Committee's section of the single text, Steiner said. These articles comprise the first five chapters—General Provisions, Global and Regional Cooperation, Technical Assistance, Monitoring and Environmental Assessment. The areas where most disagreement remains, he said, are Standards, and Enforcement.

Under standards, the questions center on the rights of

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coastal states to set environmental standards stricter than internationally agreed ones. Many states oppose leaving any residual standard-setting powers to individual nations. As it now reads, the negotiating text allows coastal states, in their territorial seas, to establish more stringent standards on vessel pollution, provided they do not hamper innocent passage. How this issue is resolved depends on how territorial seas and economic zones are eventually defined by the Second Committee. If, as expected, a narrow territorial sea of 12 miles and a 200-mile economic zone are established, the controversy over standard setting will be lessened.

The debate over enforcement centers on the new concept of extending enforcement powers over polluting vessels to the nation of the next port of call. This means that, if a vessel created an oil spill, for example, it would be subject to action not only by the coastal state affected and its flag state, but also by its next state of call, even if it were thousands of miles distant. Thus, if a coastal state did not have the ability to arrest the offending ship but could identify it, the ship could be arrested at its next port. This concept is opposed by the big maritime nations.

The Third Committee must eventually combine its work with that of the First Committee, which is dealing with the exploration and exploitation of marine resources. However, Steiner predicted, there will not be as much difficulty agreeing on how to control seabed pollution as there is regarding vessel pollution because the issue is one of single stationary sources, rather than moving ones.

The UN General Assembly made provision for a second Law of the Sea session this year, which will be held if most delegates feel the current session has enough progress and momentum to justify it. JRM

## France Proposes a Wide Range Of Environment Regulations

PARIS—France's Ministry for the Quality of Life has proposed a series of new environmental regulations—most of them under the Law for the Protection of the Environment of 1975. The proposals were announced early this month by Paul Granet, recently appointed undersecretary of state for environmental affairs.

One proposal would require that by 1978 all industrial centers and towns have their own pollution monitoring systems. Another would clean up ten of France's most polluted rivers, and one would outlaw dumping sites.

Granet noted that the pollution of France's waterways has been reduced by 15 per cent since 1970. "It would have increased by 30 per cent if nothing had been done," he said. He also said that atmospheric pollution has diminished by around 25 per cent.

The clean rivers proposal would restore by 1988 the state of riverbanks and shorelines now covered with dead trees or other debris. Within two or three years, Granet

said, the banks of at least three major waterways, including the Channel, should be entirely free of debris.

Another proposal would establish by 1977 an agency to oversee the disposal and recycling of waste materials. This agency would direct and appoint local officials in each district to supervise the wastes problems, especially the collection and recycling of old tires, used oils and discarded packaging materials.

Granet also proposed establishing a "National Air Agency" whose major aims would be to cut by half present particulate and sulphur oxide levels and to ensure that carbon monoxide levels do not increase. Its efforts would be concentrated primarily in the towns and zones now most heavily polluted. Use of fuels with more than 2 per cent sulfur would be reduced and controlled. Lead content of automobile fuels would be reduced starting Jan. 1, 1978.

Under the law pertaining to the Protection of Nature, Granet proposed institutionalizing environmental impact studies to determine potential consequences of large projects such as autoroutes, nuclear centers, dams, air bases and the like.

Another proposal would increase the number of nature preserves in France. Today there are 23 such sanctuaries, similar to U.S. national parks but on a smaller scale. Granet would like to see 100 by 1980. Parts of this proposal would be projects to protect and increase the production of salmon, establish at least two "gene banks" for endangered flora and create more regional parks like the volcanic gardens of the Auvergne in southern France.

Finally, the government would classify certain sites "in the national interest," such as the Brittany and Mediterranean coasts and the Mont Blanc massif.

These proposals will go before parliament shortly, which, in France, acts mostly as a rubber stamp for executive proposals. PAMELA TAYLOR

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## Sludge Report: How European Countries Try To Cope with Growing Tide

*One unwelcome byproduct of the push to build secondary sewage treatment plants in the U.S. is the growing flood of digested sludge that must be disposed of. Should it be incinerated, used as compost or dumped at sea? All of these methods have environmental or economic drawbacks. Here's a look at how some Western European countries are grappling with the same problem.*

The treatment and disposal of sewage is a growing problem in Britain and a considerable future investment in treatment plants will be needed to keep pace. The seven water authorities established in 1973 are responsible for dealing with this problem.

Of the total sludge now produced at inland sewage works in England and Wales, which serve some 40 million people, it is estimated that about 1/5th is dumped at sea, 2/5ths is applied to agricultural land as a soil conditioner and the remainder is disposed of on land in other ways, such as landfill. Some incineration also takes place, but is not popular because of the technical problems and the cost.

Some research has been done on the marine pollution resulting from sludge dumping. A Department of the Environment Working Party report published in 1970 thought there was still some leeway for dumping at sea, but recommended more monitoring and research. An extensive survey of the Liverpool Bay area in 1973 could foresee no significant effect on marine life or human amenity from 80 years of dumping but recommended further routine monitoring.

A small percentage of the sludge prepared for the land is aerobically digested, but by far the greater part is anerobically treated. Viruses that can survive this treatment are not yet considered a great problem. According to the area and the type of sludge produced, several methods to provide a further killing-off period are used. Sludge can be stored at the sewage works after treatment for several weeks. It can be reserved for crops that will be cooked, such as root vegetables. Or it can be applied to the land at a time of year that will ensure exposure either to frost or strong sunlight. Where sludge is mechanically dewatered, heating to aid filtration also destroys viruses.

Water authority officials agree that the best method of preventing the build up of toxic metals in sludge is to enforce treatment at the source. The potential power of the British legal framework has ensured a good record on this point. But the sheer number of industries in an area may lead to a buildup of metals in the treated sludge that would prevent its use on the land in any form as a soil conditioner or fertilizer.

Research into these problems continues, and water

authorities await the publication later this year of a report on sewage disposal by a standing committee of the government.

**In Switzerland**, according to the Office for the Protection of the Environment, most municipalities recycle their digested sludge by burning it with garbage to produce heat, or by processing it for soil conditioner.

In both cases, tight controls are imposed. Although the federal office does not have real enforcement powers, it does control government subsidies to municipal treatment systems. This control of the purse strings provides the necessary leverage.

The federal environment office works closely with the National Agricultural Research Institute in controlling the output and use of the sludge processed to be mixed with fertilizers. This process provides a double plus for Switzerland: the country has always been obliged to import nitrogen and phosphorus fertilizers—thus the conversion of sludge not only improves crop yields, but it also helps the balance of payments.

The research institute maintains qualitative and quantitative controls on the digested sludge even when, as is customary, a private compost company contracts for the processing and sells the mix to farmers. The continuing analysis insures there are no excess amounts of heavy metals or other toxic substances in the final mix.

The institute also records where the sludge fertilizer is used, noting both the sales to each farmer and which fields it is used on. Thus the institute can recommend what other types of fertilizer should be added to provide the best balance.

Cities that burn the sludge mixed with garbage often use the energy produced for industrial purposes. However, the sludge itself does not contribute significantly to the heat content. These incinerators are equipped with scrubbers. Geneva burns some of its sludge with garbage and sends the rest to compost plants.

**Denmark** does not allow digested sludge to be dumped in the ocean. Much of the country's sludge is therefore incinerated, although increasing use is made of both sludge and other household wastes to make compost suitable for land fills.

There is controversy in Denmark over the use of sludge for agriculture. Few farmers know how to use it and many are afraid of reports that viruses can survive the treatment process and that the sludge can contain toxic metals.

The Danish Ministry of the Environment is preparing a pamphlet advising on the best ways to use sludge, and instruction on its use is being given in the technical and agricultural high schools.

In the municipality of Odense, population 170,000, household refuse is ground and mixed with sludge in a



two-to-one weight ratio. It is then stacked for composting. The product is expected to be used in gardens or as an agricultural soil conditioner, depending on the outcome of tests at the Askov Experimental Station. Emphasis in these tests is to analyze the heavy metal content of the Odense compost and of the experimental crops grown on it. This work has just begun and no results are yet available.

The sewage treatment plant at Odense produces sludge with about 25 per cent dry solids, and the cost of producing the compost is about 16¢ per sack, corresponding to the refuse output of one household in a week.

At the Avedore sewage treatment plant, scheduled to be completed in 1985 with a capacity of 650,000 population equivalent, the largest in Denmark, the designers opted for sludge incineration after concluding that composting was impracticable because of the large quantities involved.

**In France**, the sludge problem is seen as part of the overall industrial and household sewage problem, a relatively recent concern of the French. It was only last year that the government passed a law pertaining to the "Elimination of Sewage and the Recovery of its Matter." The law gave the government a vehicle with which to enforce sanctions against those who are negligent in disposing of sewage.

The first industrial sewage processing plant went into service in 1974 in the Alsace along the Rhine, and two others started up in 1975, one in Normandy and one in Picardy. Two others are under construction at Roissy-en-France outside Paris and at Le Havre. Two main industrial cities—Marseilles and Toulon—do not have industrial waste treatment centers, although they have domestic sewage treatment plants. According to the Ministry for the Quality of Life, industries in this area, along the Mediterranean coast, "generally observe the rules concerning the treatment of their toxic sludge."

Last year's law also provides that, within five years, each municipality must have its own system of collecting and treating domestic sewage. Industrial and domestic sludges are treated differently in France on the assumption that only industrial wastes contain toxic substances.

One method for treating domestic sludge is in sludge ponds where it is allowed to ferment and form a dry cake. The cake can be used as a fuel or in fertilizers or to protect vines and other crops from frost. Sludge is also used in France to fill up sand and gravel quarries or as a base for road pavements.

The French government will finance up to 80 per cent of a municipal treatment plant and up to 50 per cent of an industrial sewage treatment center.

**In the Netherlands**, the government has announced plans for 1975-1979 to build 118 new sewage treatment plants to bring the country's total to 480, while the capacity of 59 existing plants will be expanded. On Jan. 1, 1975, there was capacity of 11 million population equivalent, and this is to be doubled by 1980.

Industries must obtain a license to dump wastes in

surface waters, and the costs of meeting the terms of the license are borne by the industry in question. On top of this, they must pay a sewer surtax. And Dutch families must pay a levy out of which municipalities and provinces finance their sewage plants.

Generally, the digested sludge from these plants is spread in drying fields. More than half the treated sludge is used by agriculture either directly as manure, or mixed with sand as a soil conditioner. In 1970, 53 per cent of the sludge was used in agriculture, 11 per cent in parks and sports fields, while 36 per cent was dumped.

Under the current government program, a special commission was set up to study the sludge problem.

All of Amsterdam's sewage and sludge receives secondary treatment. All of the sludge is sold to a contractor for use as soil conditioner.

In Rotterdam, however, the four plants have a capacity equivalent to only 220,000 out of the population of 875,000. Untreated sludge is dumped in the Nieuwe Maas River leading to the North Sea. But under the government program Rotterdam expects to build new plants to a capacity of one million by 1980.

Today, the city uses treated sludge for parks. Farmers and horticulturists in the area are reluctant to use it because they fear viruses. When the new plants are built, there will be more sludge than can be used in Rotterdam's parks. It is hoped that the quality will be by then satisfactory for agriculture. If not, it will be incinerated.

The government recommends, in a report issued last year, that sludge be pasteurized after biological treatment to make it harmless. As for heavy metals, the report says they can be curbed by a strict licensing policy for dumping.

**In Italy**, most digested sludge is dumped in open-air plots to dry, but incineration is seen as the preferred method of the future. A few small towns use sludge as a soil conditioner, but there is no demand for the watery material near the major cities. The value of the sludge to farmers is not great enough to offset the costs of dewatering and transportation.

In the developed North, however, there are examples of sludge being carried by canal to the fields (south of Turin), or being composted with solid refuse (near Milan). Elsewhere, the sludge is dried up to 25 per cent water content and then burned in multi-hearth incinerators of U.S. design. The ashes are dumped in quarries or landfills.

Among the 300 or so secondary treatment plants that now serve less than 5 per cent of Italy's people, very few now incinerate sludge, but the majority are building incineration units.

Italy has no law compelling communities to treat their sewage, although treatment is required by health and fishing laws designed to protect human and animal life, not water standards. One bill for water protection has been debated in parliament since August 1974, after 15 years of preliminary study; approval is not expected

*(Continued on p. 5)*



## Environment Exhibition: Tokyo Hosts International Show and Seminar

**TOKYO**—Preparations are being rushed here for World Environment Exhibition '76, scheduled to be open May 31 to June 9 at the Tokyo International Trade Center on Harumi Pier, not far from the downtown center. The Japan Productivity Center and the Nihon Keizai Shim-bun, Japan's leading economic newspaper, are joint sponsors.

The exhibition will be divided into five zones under a main theme of "Toward a Pollution-Free Society." In Zone 1, United Nations organizations will use 3,000 sq. ft. for displays illustrating the relationship between the global environment and mankind, common environmental problems around the world and what must be done to solve them.

Japanese government ministries and agencies will use another 3,000 sq. ft. of Zone 1 to illustrate Japan's pollution problems. Zone 2 is to be shared by Japan's local governments and the country's various industrial associations, which will display their various environmental improvement programs, both at home and abroad. On display will be latest methods for recycling resources and wastes, as well as future possibilities.

Zone 3 is reserved for displays of current environmental research and development efforts by government and industry. Zone 4 is for pollution control hardware and software, including solid waste disposal equipment and monitoring devices. Zone 4 is also expected to show energy conservation and recycling devices, as well as new energy sources. Zone 5 is designated for open-air displays relating to the general exhibition theme.

At present, the sponsors expect participation by the UN agencies, the Organization for Economic Cooperation and Development (OECD), and governments and private companies from the U.S., Canada, Britain, Sweden, France, West Germany, Brazil, Czechoslovakia, East Germany, the Netherlands, Switzerland, Italy, Denmark, Norway, Australia, Singapore, the Soviet Union and Belgium, although the final representation is still not known for sure.

Preceding the exhibition will be a technical program in the form of an International Environment Symposium on May 26-28 in Tokyo's Imperial Hotel. Japanese and foreign experts will take part in discussions of such topics as industrial development and the environment, recycling and the conservation of resources, urbanization and the environment, and the economic aspects of environmental protection.

Information on symposium attendance is available from Nihon Keizai's IES Secretariat, 1-9-5 Otemachi, Chiyoda-ku, Tokyo, and exhibition tickets can be obtained from the Japan Productivity Center's World Environment Exhibition Secretariat at 1-2, 3-chome, Shibuya-ku, Tokyo.

Although the deadline for exhibits was Dec. 31, some

additional spaces may still be available. Write the Agency for the World Environment Exhibition '76, c/o Japan Productivity Center, 1-1, Shibuya 3-chome, Shibuya-ku, Tokyo, 150, Japan.

A. E. CULLISON

### Sludge Report (continued from p. 4)

before next summer. The stumbling block is state financing of treatment plants in times of recession.

The law would only set guidelines for water standards and sludge disposal, with actual implementation left to 20 regional authorities. Starting this year, the financing of sewers and treatment plants is left exclusively to the regional governments, which are still too new to have reliable sources of funds.

Only three regions in the developed north, plus Sardinia, have water laws anticipating the national law provision for sludge disposal. It is expected this specific problem will be covered by a new law for solid wastes. Originated last year by the Common Market in an instruction to its nine members, this law is still in the stage of preliminary study by interested ministries. If sludge is disposed of along with refuse, it is believed it could yield a valuable gas as a byproduct fuel.

Both the water bill and the solid waste bill could die through dissolution of parliament in the next governmental crisis. Italy has yearly changes of cabinet, and the new one-party cabinet is considered the last possible chance for the present legislature.

**In three years**, Vienna, whose population is 1,615,000, will have a modern sewage treatment system, thus ending its role as the major polluter of the Danube. One part of the program—a two-stage biological plant in the hamlet-suburb of Blumental—is already in operation.

The main part of the disposal system, due to come into operation in mid-1979, will include a complete treatment plant in the southeast suburb of Simmering to which all city sewage will be pumped for two-stage treatment. The sludge will be incinerated.

No problems are anticipated. Simmering is sparsely populated, is well away from town and has only a few light industries. There is ample flat open country where the incineration plant could be built. Potential air pollution is not foreseen as a serious problem.

Elsewhere in Austria, modern sewage treatment is still what is known as "zukunfts musik," music in the future. After Vienna, the chief polluter of Danube water is Linz (population 203,000) with its large steel works. There is some first stage treatment of domestic sewage, and industrial outflow is also controlled, but there is no secondary treatment.

EDWIN BROOK, CONSTANCE CORK  
HENK KERSTING, WILLIAM MAHONEY, ALAN MASSAM  
VITTORIO PESCIALLO, PAMELA TAYLOR



## Briefs . . . .

### British Monitor Detergent Mix

Under a voluntary agreement with the Department of the Environment, the British Soap and Detergent Industry Association will give advance notification of changes in types or levels of ingredients in detergents. The Department will set up a scrutiny group to monitor this information and make sure that any new detergents are sufficiently biodegradable to avoid harming rivers or sewage treatment plants. The agreement follows a recommendation last month by the Standing Technical Committee on Synthetic Detergents, which was established in 1957 to review the effects of synthetic detergents on sewage and water supplies and to encourage coordinated research by manufacturers and public bodies.

While there are legal sanctions against harmful industrial effluents, it has always been government policy to seek voluntary cooperation as far as possible. The report also recommended use of a new polyglycol which is 85 to 90 per cent biodegradable.

### Zurich Will Pay for Noise Control in Roadside Buildings

In a move that may establish legal precedent, the Swiss city of Zurich has decided to pay for the installation of new anti-noise windows in apartments that now find themselves surrounded by a complex of high-speed super-highways.

The initial plan called for spending about \$22 million, and this included a project to add special ventilation that would counteract exhaust fume pollution. However, now as a first step the city has demanded a credit of about \$2.8 million. This will permit the work to begin on replacing some 6500 windows in 250 buildings on the

west side of the city. The special windows are supposed to reduce the noise by about 50 per cent. The work will take place on the west side of the city, the "Westtangente". The city has also decided to reimburse owners who have already spent their own money on anti-noise buffers.

Zurich City has asked the canton and the federal government—which had participated in the original construction of the "Westtangente" by picking up 30 per cent of the costs each—to pay an equal share of the noise abatement costs.

### South Korea Attacks Industrial Pollution Problems

Many parts of the Han River, which flows through Seoul, South Korea, should become cleaner this year. Over the past 15 years, the river has fast deteriorated, with pollution from both industrial effluents and sewage rising. This month a waste water treatment plant is scheduled to start up at Chonggyechon, up river from Seoul. It has an aeration tank and sedimentation tanks and a capacity of 210,000 tons of waste water daily. Two more plants are being built, and authorities believe that, within the next few years, the inhabitants of the capital will enjoy much purer water in their river.

As part of the government's plans to clean up Seoul, 178 factories will be moved outside the city's boundaries by the end of this year. The government intends that more than 1,000 polluting industries will move outside the city by 1980. These factories are mostly metal, petrochemicals or food operations.

In another development, the South Korean National Institute of Health, the Office of Fisheries and various academic bodies will survey the causes and effects of pollution along the South Korean coast in the near future. The move is in reaction to the increasingly large numbers of shellfish ruined by industrial wastes. An estimated 1,033 tons of shellfish cultivated in more than 2,500 acres have been affected.

### West Bengal Would Institute Compulsory Sterilization

A bill before the current session of India's West Bengal legislature would make sterilization compulsory for eligible couples with three or more children, with a fine or imprisonment as alternative. The government of West Bengal, which includes Calcutta, had set a target of 300,000 sterilizations a year, but achieved only 112,000 during the ten months ending in January. The birth rate in West Bengal, India's most congested state, is 38 per 1,000—one baby every 19 seconds.

At the same time, the state government detailed incentives for those families limiting themselves to two children. These include jobs, housing loans, housing allotments, business loans and free medical attention. Couples having more than two children will have to be sterilized within two months. Villages that show particular initiative will be given priority in development schemes and better drinking and irrigation facilities.

India has only 350 towns, but has 560,000 villages with 80 per cent of its 600 million people. Karan Singh, the central government's health minister told *World Environment Report* that his ministry has plans to carry the population control program on a massive scale to the villages. "We cannot afford to add one Australia (13 million) to our population every year," he said. "It must be dealt with on a war footing."

### Tibet Uses Solar Energy

Many Tibetans in Lhasa now bathe through the use of solar energy, according to Chinese reports. The region has good conditions for solar development—3,000 hours annual sunshine and low density and humidity. Solar energy is used not only for heating Lhasa's ten solar-powered public baths, but also for heating factories and increasingly for cooking. A solar energy oven is being distributed to Tibet's remote areas.



### Eastern Bloc Seeks Cooperation With EEC on Environment

East German Vice Premier Gerhard Weiss, chairman of Comecon (the Eastern Bloc's Council for Mutual Economic Assistance) said last month that the bloc wants not only increased trade with the European Common Market, but also cooperation in environmental protection and economic forecasting. Weiss met in Luxembourg Feb. 16 with EEC officials and presented a formula for establishing relations. The Soviet Union urged the EEC to waste no time taking up the Comecon proposals. The party daily Pravda said they are "another confirmation of the efforts of the socialist countries to realize the decisions of the Helsinki Conference."

### Stanford Research Studies European Pollution Transport

Stanford Research Institute (SRI) of Menlo Park, Calif., is carrying out a \$330,000, two-year study for West Germany's Interior Ministry on the dispersion and exchange of air pollutants among the countries adjacent to West Germany, as well as the Scandinavian countries. According to SRI, the project could form the basis for an international air quality management plan for Europe. The current study is an extension of a 1974 study.

Researchers will use upper air wind data, precipitation data and computer programs that subdivide the geographical area. They will track simulated pollutant emissions released every 12 hours from the subdivisions. The study will consider sulphur dioxide, carbon monoxide and nitrogen oxides.

### Rio's Anti-Noise Campaign Is a Thing of the Past

Six months after a campaign to cut down the noise of honking cars and police whistles in Rio de Janeiro's beachside Copacabana district, the

cars are honking and the police are whistling just as much as ever. The pilot project, which was aimed at two of the most noticeable parts of Rio's cacaphony, was meant to spread to the rest of the city, but has now been forgotten. Noise checks a few months after the project showed that the average level—85 decibels—had not been affected. A newspaper survey showed that the police are not only using their whistles again, but are also ignoring the motorist who honks "discreetly," levying fines only in extreme cases. A bigger nuisance than cars is the thousands of city buses that had their horns removed three years ago to reduce noise. Now the drivers loudly rev their badly tuned engines to scare the pedestrians.

### Trees Can Cut Lead Spread

Trees and shrubs planted alongside busy roads can minimize the effects of lead pollution from gasoline, according to a report given to the British Ecological Society by two ecologists from the Biology Department of Liverpool Polytechnic. Measurements were made of lead deposits in a woodland belt and in open fields bordering a grade A road. Inside the woodland, lead concentrations had dropped to background level at 16½ yards from the road; in the open fields, it took 55 yards.

### Egyptian Drainage Project Will Counter Effects of Aswan Dam

The Egyptian Ministry of Irrigation has been allocated 50 million Egyptian pounds (about \$75 million) for 1976, an increase of 14 million over 1975. According to the Minister of Irrigation, Abdel Azim Ata, 36 million pounds will go directly into drainage projects to counter the effects of a rise in subterranean water levels. This rise in water tables is traced directly to the changes

brought about by the Aswan High Dam. A primary objective, said Abou Ata, is to save the cultivable areas affected by the rise.

Covered drainage projects will serve a total of 764,000 acres in 1976, while 20 main drainage stations serving 1.1 million acres are scheduled for completion by the end of this year, and work on five more will begin in early summer. To speed up construction, the ministry intends to place responsibility for the drainage projects under one department, Abou Ata said.

### UNDP Will Aid Tidal Power Development in India

The UN Development Program (UNDP) has promised \$2.2 million to help a tidal power project in India. The nine-meter tidal range at four creeks in the Gulfs of Cambay and Kutch on India's northwest coast are among the highest in the world, according to Dr. P.C. Saxena, director of the Coastal Engineering Research Center. The Gulf of Cambay could generate 6,000 to 7,000 megawatts, he said, and the Gulf of Kutch 1,000 MW. The Sunderbans near the mouth of the Hooghly River near Calcutta on the eastern coast also has potential, Saxena said, although the site is not as ideal. A government feasibility study showed that tidal power could be competitive with India's existing sources of power.

Prof. E.M. Wilson, a UN tidal power expert, visited the sites last year and was reported to be much impressed with their high potential.

### ILO Looks at Chemical Industry Environment Record

A committee of the International Labor Organization (ILO) recommended last month at a Geneva meeting that chemical industries take all possible steps to protect the environment and the health of their workers. Some 200 government,



employer and worker delegates from all parts of the world took part in the ILO's Chemical Industries Committee meeting.

A report prepared for the meeting showed that the chemical industry in many industrialized countries is already carrying out extensive programs towards these ends. In West Germany, for example, the chemical

industry spent about \$588 million on treating industrial waste in the Rhine and its tributaries between 1970 and 1974, according to the report, and a further \$196 million is spent yearly on in-plant treatment projects.

A survey by the Association of the Netherlands Chemical Industry shows a planned investment of nearly \$20 million for water treatment in

1974, an increase of nearly 300 per cent in two years. In Japan, the amount spent on pollution control facilities in 1975 amounted to 23 per cent of all investment, compared with 11 per cent in 1973. The U.S. chemical industry, the ILO report says, allocated \$112 in 1972 to research and development work on pollution control technology.

## Publications . . . .

Following is a list of books and other publications received by *WER* in recent weeks that relate to international environment issues. For further information, contact the individual publishers.

**Worldwatch Papers.** Published by Worldwatch Institute, 1776 Massachusetts Ave., N.W., Washington. A series of papers aimed at identifying "future social trends and problems." Those published so far are: 1. *The Other Energy Crisis: Firewood*, by Erik P. Eckholm; 2. *The Politics and Responsibility of the North American Breadbasket*, by Lester R. Brown; 3. *Women in Politics: a Global Review*, by Kathleen Newland; 4. *Energy: the Case for Conservation*, by Denis Hayes. Paper 5, due to be published this month, is *22 Dimensions of the Population Problem*, by Lester Brown, Patricia McGrath and Bruce Stokes. The papers are available at \$2 for individual copies, or one may subscribe to the series for \$25 per year.

**Small Mammals: Their Productivity and Population Dynamics.** (*International Biological Programme 5*). Edited by F. B. Golley, K. Petrusewicz and L. Ryskowski. Cambridge University Press, New York and London. \$32.50. 451 pages. A part of the IBP series, this book reviews the current knowledge on small mammal populations in a variety of ecosystems, with special attention to their impact on agricultural production and public health.

**Nitrogen Fixation by Free-Living Micro-Organisms** (*International Biological Programme 6*). Edited by W. D. P. Stewart. Cambridge University Press, New York and London. \$37.50. 471 pages. Another IBP book, this one is based on an international symposium held in Edinburgh in 1973. IOT discusses nitrogen fixation by bacteria and algae, the biochemical aspects of nitrogen fixation and methods for measuring nitrogen fixation.

**Problems of International Business Cooperation in Environmental Protection.** Jack N. Behrman and William Gilbert Carter. Fund for Multinational Management Education, 680 Park Avenue, New York. 95 pages, plus annexes, softbound. This study was prepared

for the International Affairs Division of the Environmental Protection Agency (EPA), with the financial support of the National Science Foundation. It is a survey of what is already being done in international business cooperation on environmental problems and is described as preliminary to further discussions on what could be done. The study discusses existing organizations in several industries—petroleum, iron and steel, paper and pulp, non-ferrous metals and chemicals—and discusses the problems of information exchange, conflicting laws and measurement techniques, anti-trust and organizational attitudes.

**Water Resources of the World.** Frits van der Leeden. Water Information Center, Port Washington, N.Y. \$32.50. 568 pages. A reference work covering 138 countries and territories, as well as worldwide statistics. The book includes tabular data on available water resources, municipal water supply systems, river flow runoff, hydrographic data, hydroelectric development, groundwater basins, water demand projects, major lakes, fluoridation and the like presented country-by-country and continent-by-continent. Van der Leeden is also co-author of the same publisher's "Water Atlas of the United States."

**Losing Ground—Environmental Stress and World Food Prospects.** Erik P. Eckholm. Norton, New York. \$7.95 hardbound, \$3.95, softbound. 223 pages. Sponsored by the UN Environment Programme (UNEP) and the Worldwatch Institute, this book documents the author's contention that strong forces are acting to destroy the productivity of the world's agricultural land, particularly in developing countries. These forces include rampant deforestation, which leads to erosion of topsoil, flooding and declining fertility, burgeoning populations and encroaching deserts. He calls for massive reforestation programs, agricultural reforms to benefit peasant farmers and a slowdown in population growth.

**Island of Dreams: Environmental Crisis in Japan.** Norie Huddles, Michael Reich, Nahum Stiskin. Autumn Press Inc. Japan. U.S. and Canadian distributor: Book People, Berkeley, Calif. \$4.95. 352 pages, softbound. A discussion of how "the negative consequences of Japan's high-growth policies may well foreshadow an advanced stage of our planetary predicament." Covers such phenomena as Minimata disease.

**Ekistics.** The Athens Center of Ekistics is publishing six special issues of its journal on topics for the UN's Habitat Conference in Vancouver, May-June, 1976. The topics are: meeting housing needs; systems of human settlements; land development policies; education in human settlements and the environment; healthful human development; and a tribute to C. A. Doxiadis, founder of the center, one year after his death. The issues may be ordered in advance at \$3 each or \$12 for six from Ekistics, Page Farm Road, Lincoln, MA 01773.

**INIS ATOMINDEX.** Published by International Nuclear Information System (INIS) a project of the International Atomic Energy Agency (IAEA), the index now incorporates the information previously carried by Nuclear Science Abstracts, now discontinued, which was published by the U.S. Energy Research and Development Administration. ATOMINDEX thus "converts from a world-renowned bibliography to the world's only international nuclear science abstracting services." It is available from UNIPUB, Box 433, Murray Hill Station, New York. \$150 for 24 issues and two cumulative indexes.

Reports from Stichting CONCAWE, the Western European oil industry study group on clean air and water. Latest titles are: *Report 8/75—The Identification and Measurement of Refinery Odors*; *Report 9/75—The Sulphur Grid Method*; *Report 1/76—Published Regulatory guidelines of Environmental Concern to the Oil Industry in Western Europe*; *Report 2/76—Determination of Sound Power Levels of Industrial Equipment, Particularly Oil Industry Plant.* These reports are available in English free from Stichting CONCAWE, 60, Van Hogenhoucklaan, The Hague 2018, The Netherlands.





# World Environment Report

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## UNEP: Governing Council Tackles Crowded Agenda

The United Nations Environment Programme's Governing Council begins its fourth annual meeting in Nairobi this week with a formidable work load to deal with. The 58-nation council is scheduled to wade through some 800 pages of documentation during its two-week session at UNEP headquarters.

This will be the first council meeting since Mostafa Tolba became UNEP's Executive Director. In his report to the Council, "The State of the Environment 1976," Tolba stresses the environmental aspects of the New Economic Order theme developed by the UN's General Assembly. The main thrust of his message is "the elimination of poverty, which affects the majority of mankind, through modes of development which protect and enhance man's environment."

At one time, he points out, international environmental debate centered on problems recognized by the developed countries—the need to control pollution and conserve samples of the ecological richness and natural beauty of the earth. Today, however, it is realized that over much of the world "the environmental problems are still those associated with poverty—poor housing, bad public health, malnutrition and inadequate employment."

These problems can only be solved by development, according to Tolba, but it must be based on thorough evaluation of the "potential uses of the different regions of this highly variable earth." Much can be done to improve the environment, Tolba maintains, and "probably the only pollutants still increasing are those whose hazards to man or other forms of life have not yet been demonstrated." Science must ensure that new pollutants do not create unrecognized hazards.

But, Tolba concludes, the essence of the environmental challenge "is political rather than technical," and it must be solved through international cooperation on a scale not seen so far in human history.

In his report, Tolba deals at length with the problems of hunger, population, energy supply, growing urbanization and the effects of pollution on world climate. He declares that "the present way of life and consumption patterns of the developed countries are not sustainable and accordingly are not the best for other states, even if they could be afforded in a world whose resources are limited." A major effort is needed to develop new technologies and development strategies for

both developed and developing countries.

Tolba goes on to cite recent successes in attacking environmental problems—for example, the progress in the industrialized countries in curbing air pollution. He describes Britain's success in reducing its famous smogs and the U.S. progress on cutting automotive emissions. He praises the efforts of such cities as Siena, Pisa, Florence, Rome, Milan, Munich, Nuremberg and Dusseldorf to control the number of vehicles entering their central areas, and mentions improvements in industrial air pollution control.

As for the water quality, Tolba points out that waterborne diseases, such as cholera, typhoid and enteric fever have been "reduced to insignificance," and more recently China "has virtually eliminated schistosomiasis." Now that disease has been controlled, attention has turned to enhancement of the freshwater environment, he points out, citing U.S.-Canadian efforts to clean up the Great Lakes and Soviet policy to preserve Lake Baikal.

Seven important global conventions came into effect during 1975 as a result of recent ratification by a number of states, Tolba notes. These are: the Convention on International Trade in Endangered Species (1973); the Convention on Wetlands (1971); the Convention Concerning Protection of World Cultural and Natural Heritage (1972); the International Convention on Intervention on the High Seas in Cases of Oil Pollution Casualties (1969); the International Convention on Civil Liability for Oil Pollution Damage (1969); the Convention on Dumping from Ships and Aircraft (1973); the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972). Tolba also pointed out the recent signing of the Mediterranean Convention (*WER*, March 1, p.1).

Among the specific issues on the Governing Council

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agenda are a paper on shared natural resources; the question of environment vs. development, on which UNEP will ask more guidance before producing its Level I report; a report on irrational use of natural resources, in which UNEP will suggest an expert meeting to define criteria; a discussion of UNEP's institutional arrangements; and a discussion of the new human settlements foundation.

The U.S. delegation to Nairobi is headed by Deputy Assistant Secretary Roy Morey of the State Department's Bureau of International Organization Affairs and includes Robert Kitchen of the U.S. mission to the UN, John Trevithick, Donald King, and Stanley Schiff of the State Department, Paul Bente of the Council on Environmental Quality, Walter Telesetsky, of the National Oceanographic and Atmospheric Administration, and John Thompson of the Environmental Protection Agency's Office of International Activities. Joining the group in Nairobi will be Edward Noziglia, who is stationed there as U.S. representative to UNEP.

Dr. King told *World Environment Report* that the U.S. does not anticipate major controversy or disagreement in Nairobi, the biggest difficulty being the terribly long agenda that must be covered in two weeks. The U.S. would like to see UNEP's Earthwatch program accelerated, he added, particularly in the areas of oceans and atmospheric monitoring. The International Referral System is coming along well, he said, and the U.S. has now identified and listed 200 information sources for UNEP. Dr. King believes the council should not go too far into the discussion of human habitation issues, pending the outcome of June's Habitat conference in Vancouver.

(Continued on p. 5)

## Common Market Deals with Effects Of Combined Air Pollutants

**BRUSSELS**—The European Economic Community (EEC) has moved to protect urban populations from the health hazards of atmospheric pollution by sulphur dioxide and suspended particulate matter.

As part of its environmental action program, the EEC has submitted to its decision-making Council of Ministers proposals to reduce sulphur emissions into the atmosphere and to create areas to be especially protected from excessive levels of sulphur dioxide and suspended particulates.

Although existing legislation in the nine member countries of the EEC treats the pollutants separately, the new proposal would deal with the increased risk of synergistic interaction when sulphur dioxide and particulates are present simultaneously. The proposal calls for determining the effects of long- and short-term exposures and establishing standards for maximum permissible levels in areas where high concentrations of the pollutants have been found.

Another proposal would limit the sulphur content in

commercial fuel oils and require the use of low-sulphur oils in oil-burning installations. This measure would primarily affect power stations, industrial boilers and large buildings in or near the protected urban areas.

## Sweden Urges International Action On Sulphur Dioxide Pollution

**COPENHAGEN**—The Swedish minister of agriculture, Svante Lundkvist, expressed his concern at the increasing amount of sulphur pollution in the air to a meeting here of the Nordic Council. Parliamentarians and ministers from Denmark, Norway, Sweden, Finland and Iceland are represented on the council, which meets alternatively in the different capitals.

Lundkvist said that a recent Swedish report shows that two-thirds of the sulphur pollution in his country comes from foreign sources. He called on the Nordic countries to make a powerful joint intervention with other international organizations to correct the problem.

The Swedish report says that the emission of sulphur dioxide in Western Europe was about 8 million tons in 1950, but said it had risen to 22 million tons by 1974. If no steps are taken to halt the rise, emissions will reach 30 million tons annually by 1985. In Eastern Europe, the emission in 1974 was 38 million tons, which will reach 45 million tons by 1985, according to the report.

Investigation has shown that the water in 10,000 Swedish lakes has been contaminated by sulphurous rain and that there have been negative effects on agriculture.

Lundkvist urged common Nordic efforts to gain international understanding of the need to limit sulphur emissions through such methods as limiting the sulphur content of fuel oil.

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## Brazil Roundup: Water Edict, Solar City, Trees, Ecology Stations, Noise

**RIO DE JANEIRO**—Here is a roundup of recent environment-related developments in Brazil:

**Water Pollution**—Brazil's Minister of the Interior, Mauricio Rangel Reis, has issued an edict classifying the nation's inland waters according to use, establishing pollution standards for them and setting forth penalties for violators. The regulations were prepared by the Environmental Secretariat, SEMA.

The four categories of use are: 1) domestic use without pretreatment; 2) domestic use after conventional treatment, irrigation of vegetables or fruit trees, contact sports; 3) domestic use after conventional treatment, protection of fish and other flora and fauna, feeding animals; 4) domestic use after advanced treatment, navigation, landscape harmony, industrial use, other irrigation and less demanding uses.

The regulations prohibit any dumping of sewage into Class 1 waters, even with pretreatment, and set forth criteria for the remaining classes covering coliform count, taste and odor, BOD, dissolved oxygen and such contaminants as ammonia, arsenic, barium, cadmium, chrome, cyanide, copper, lead, tin, phenols, fluoride, mercury, nitrate, nitrite, selenium and zinc.

Classification of waters will be done by the appropriate authorities in each state, as will enforcement of the standards. Where no state agency exists, or where it fails to protect downstream water quality, SEMA can step in and do the job. Local authorities can add new parameters or establish stricter limits than those of the decree.

Industrial wastes will also have to meet criteria regarding pH, temperature, sediment, flow variation, oils and grease in addition to other criteria.

Industries not having treatment facilities will be given a period of time to meet the terms of the edict based on the minimum time needed for design, equipment supply, installation and startup, bearing in mind that equipment should be manufactured in Brazil. Industries that have treatment facilities approved under previous legislation will have from three to six years to meet the new regulations, provided their existing installations are kept functioning in accordance with the earlier approval. In special cases, SEMA can reduce this time.

All industries that cause or can cause water pollution must report annually the volume and types of effluent, and the equipment and treatment measures taken.

An English-language translation of the new edict is available to *WER* subscribers on request without charge.

**Amazon Lumber**—An aerial photography project that has been filming all of the Brazilian territory for the last five years has revealed that the country's Amazon forests contain about \$500 billion worth of lumber, a finding seen as proof of the Brazilians' firm belief that the jungle is packed with fantastic potential wealth. This wealth in

lumber is mostly out of reach today, but as the infrastructure develops and world demand increases, the time will come when it can be exploited.

The estimate is based on detailed analysis of photographs covering every inch of Amazon soil but excluding the 30 percent of the region that is set aside as federal forest reserves. The survey came up with 795 types of tree in the Amazon, ranging from the rare black bay tree, which sells for \$70 per cubic meter, down to trees of little known commercial value. Twelve per cent of the types are said to have an export market, 37 per cent have a potential export market, 19 per cent have an assured regional market, and 32 per cent are of unknown commercial value. But even in this last category, 70 per cent are believed useful for cellulose.

**Ecological Stations**—Six stations are expected to start up this year to study the flora and fauna, erosion and microclimate of the various regions of Brazil. These are the first of 16 planned stations that have been held up so far by lack of funds and private ownership of some of the proposed sites.

Cost of each installation will be about \$100,000, plus another \$100,000 for upkeep, according to Paulo Nogueira Neto, secretary of SEMA.

The first station will be on the river island of Maraca in the northernmost territory of Roraima, an area of 153,000 hectares. It is covered with natural vegetation and has only a few squatters who will be moved. Main subject of study will be regression or expansion of the forest relative to the fields opened by the squatters. The second station will be in the Amazon jungle on the archipelago of the Anavilhanas Islands. The islands are in the middle of a dense tropical rain forest with stands of palm trees and some open fields, and they are ideal for study of the Amazon flora and fauna.

The third station will be on the Urucui River in the state of Piaui on 150,000 hectares donated by the state. It is on the division between the arid northeast and the rain forest. It is a mixture of semidesert and open pretropical forest with some open fields. It is considered a natural for study of the advance of man and destruction of the forest. The fourth station will be further south in Raso de Catarina in the state of Bahia, in one of the most arid parts of Brazil. The state has granted 150,000 hectares on an arid plateau. Main object of the study will be the animal life that lives off the water contained in plants.

Almost straight west, the fifth station will be in the Aripuana region in the Mato Grosso. This will be the largest, with one million hectares. It might be at the site of the failed jungle-scientific city of Humbolt, but negotiations are still underway. The sixth station will be in the extreme south at Taim in Rio Grande do Sul. This 150,000 hectare tract is a mixture of beach, sand dunes and the country's southernmost forest, almost Mediter-



ranean in character. It abounds in rare fauna, which will be the object of study, along with sand erosion.

The remaining ten stations will be built over the next five or six years, according to Nogueira Neto, if SEMA continues to receive financial support from the federal government and cooperation from the regions.

**Solar City**—France and the U.S. are reported to be in heated competition to build a "Sun City" for Brazil. To be located in the northeastern state of Rio Grande do Norte, the project is described as the world's first city relying entirely on the sun for energy supply.

It seems that Brazil and France have been planning secretly for the new city for the last two years. It is to be built on the banks of the Acu River. Some of the plans have leaked out to the press, but only recently has the full scope become known. Brazilian officials still refuse comment, or deny the reports. The solar agreement was to have been part of an over-all French-Brazilian Cooperation Agreement to be signed by President Ernesto Geisel when he visits Paris later this year. Another part of the ten-point agreement is to deal with nuclear power cooperation, and this is what brought the U.S. into the picture.

The U.S., it is believed here, is still smarting over last year's Brazilian-West German long-range nuclear plant contract, which had been expected to go to the U.S. Now, to recoup some of this loss, the U.S. is reported offering Brazil an alternative to the French package deal, which includes U.S. solar know-how. Papers here report that Henry Kissinger himself during his visit last month urged the Brazilians not to sign the French deal without giving the U.S. a chance to present its proposal for a major solar energy project. Now, Brazil's Minister of Mines and Energy, Shigeaki Ueki, is to fly to Washington in April to see the U.S. plan before President Geisel goes to Paris.

Brazilian solar experts say privately that the U.S. proposal would have to be an outstanding one to beat the French project, which is apparently in the advanced stages of planning. It would be coordinated by the Sofrette company, which has plenty of experience in the field.

**Noise Pollution**—A six-month study just completed says that noisy automobiles are the main contributors to Rio's severe noise pollution. Made by the Acoustical Division of the Brazilian Association of Technical Standards, the study shows that cars leave Brazilian assembly lines registering an average 90 db, not including the horn, which can be as high as 104. As cars age, they become noisier.

The study found that average noise level in downtown Rio has reached 96 db and is increasing at 2 db per year. Doctors warn that this problem is already causing deafness, neurosis, ulcers and might even be responsible for abortions and birth deformities.

The state environmental agency has appointed a study group to revise the 1969 Silence Law. Most Rio residents

say they would support a campaign against noise pollution, but the city authorities have found no way of enforcing the 1969 law. Last year's big campaign to stop horn honking has been virtually forgotten, no attempt was ever made to cut down construction noise, and record shops and auctioneers blare their wares at 100 db in specific defiance of the law.

The major daily *Jornal do Brasil* opposes revising the law on the grounds it is useless to replace one impractical law with another unless a means of enforcing it can be found.

But Alberto Vieira de Azevedo, a member of the study group and president of the Acoustical Division of the Brazilian Association of Technical Standards, says the 1969 law "was born wrong" after being cut up in the Chamber of Deputies. In its present form, he said, the Silence Law does not consider urban zoning, noise level in terms of its duration, or the various frequencies of sound, doesn't define traffic noise and doesn't deal with night sounds.

He said the revised law will define and establish standards in five areas—traffic, construction, stores, industry and airports. It will provide for a powerful inspection force and sound pollution courses and lectures from primary through specialized technical schools.

GEORGE HAWRYLYSHYN

## French Reject Soviet's Proposed Environment/Transport Conference

**MOSCOW**—The French government has turned down a Soviet proposal for a European conference on the problems of transport and environment.

The rejection was revealed here March 15 during a visit by the French Foreign Office Secretary General Geoffrey de Courcel, who was in Moscow to prepare the ground for a visit to France by Soviet Foreign Minister Andrei Gromyko next month or in May.

According to sources with the French party, the French government turned down the proposed conference on the grounds that it "would be more spectacular than efficient."

Simultaneously, the U.S. embassy here announced that a meeting scheduled for March 15-20 of the U.S.-Soviet Joint Commission on Energy Cooperation had been postponed at the request of the U.S. The meeting would have been the second since the commission was established in 1974 to explore possibilities for cooperation on energy between the two countries. "We asked that it be postponed until the second half of the year for more preparatory work," an embassy spokesman said.

A wide range of topics was on the agenda, including cooperation in the fields of solar, electrical and coal-fueled energy production.



## Recycling: Danish Test Finds High Enthusiasm, But High Costs Too

**COPENHAGEN**—A year-long experiment in sorting garbage at the source has shown that a high degree of citizen participation can be achieved and maintained, that Danish domestic waste contains about 20 per cent recyclable material, but that the system is still too costly to be economic.

These are the main conclusions of a test conducted in Birkerød, a community of 22,000 on the outskirts of Copenhagen, by Enviroplan A/S, along with town officials, various consultants, manufacturers and observers from the Danish Environment Ministry.

In the test, householders, and janitors of apartment blocks and businesses were provided with large paper sacks into which they sorted paper, cardboard, glass and putrescible refuse. People were extremely enthusiastic about the project, according to the organizers, with participation reaching 90 per cent. The waste paper collected was equal to 23.55 kilograms (52 lb.) per capita per year.

The chairman of the technical committee overseeing the test, Poul E. Frederiksen, said the results showed that if people believe recycling can be effective, there will be an effective basis for a whole industry. It would be practical, for example, to build a paper mill relying exclusively on recycled newsprint for raw material, he said. Furthermore, he added, presorting by householders and others reduces pollution and cuts waste of raw materials. But the costs of collection remain a problem, he said, and the results of the test were clouded by a sharp drop in the price of wastepaper.

These points were emphasized by Niels J. Hahn of Enviroplan, who told *World Environment Report* that the cost of collecting the recyclable materials in the experiment was \$100 to \$110 per ton. "If the material could be collected for about \$55, it would be economic," he said. "If it cannot be made economic, there would have to be government support for the recycling industry."

Hahn said that at the outset it was expected participation would be high but that it would fall off to around 60 per cent during the test. Actually, it remained near 90 per cent throughout. However, the volume collected did decline because, according to Hahn, people had an accumulation of material on hand at the start.

Cost of the experiment was \$73,545, about \$9 per household per year. Enviroplan had five people assigned to the project, but they did not work on it full time.

One thing that caught the experimenters by surprise, Hahn said, was the fall in paper prices. "When we started in 1974, the price was about \$40 per ton. In January, 1975, it fell to \$16; in February, it fell to nothing. In the end, we could not sell the material we had collected. The price is now rising and we can get \$16 again, or \$25 for good quality office wastes." The Danish paper industry today uses 50 per cent recycled material along with 50 per cent virgin fibre.

Two more communities—Hellerup and Albertslund—

are beginning trials, Hahn said, primarily as a means of creating employment. Three people were employed full time at Birkerød on the recovery program. Birkerød is continuing its program, but with modifications. Tin cans are no longer allowed. Papers are still collected in special sacks, but bottles must now be taken to big containers placed in supermarkets.

Glass collection is still 70 per cent of what it was with the sacks, according to Hahn, but collection costs are much lower. Now the bottles are cleaned and reused, where they had been crushed to make new glass in the original test. People do not seem to require a return fee to bring the bottles back, he said.

In Aalborg, an experiment has begun with the collection of bulky wastes, such as old furniture and refrigerators. Instead of having to transport these materials themselves to the nearest landfill, citizens are advised of a special collecting day when they can put bulky items on the street for collection. A report will be made at the end of April on whether the program can be extended to all of Aalborg's 160 inhabitants.

The most important thing in starting a recycling program, Hahn told *WER*, is to be sure the materials collected can be placed. "If you start a trial like this and it is then reported the materials must be incinerated, then you can be sure people will not give their support. But if you have good possibilities for disposing of the materials, then you also have the possibility of making the program economic and interesting to the people."

CONSTANCE CORK

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### Governing Council (continued from p. 2)

On the issues of future support for UNEP and the directions it is moving, Dr. King told *WER* the U.S. intends to continue supporting the agency beyond the initial five-year period, which ends in 1977, and has no strong disagreement with the directions it is taking. He added, however, that the U.S. feels UNEP should concentrate its resources more in a few selected major program areas, like the Mediterranean program, for example. Small projects here and there are necessary to get things started, he said, but the U.S. would like to see the project size grow and would like to see UNEP working more with individual nations than with the other specialized UN agencies. By following the latter course, he said, UNEP risks overlooking work that has already been done in its area of interest.

For example, he said, the World Bank and the Agency for International Development have already done significant work on guidelines for including environmental protection in development programs, and probably "80 per cent of the information on the ozone problem is already available from the U.S. government."

JRM



## In Brief...

### French Researchers Launch Major Solar Energy Program

Two French government research agencies—the National Center for Scientific Research (CNRS) and the National Center for Space Study (CNES)—have joined forces on a major solar energy development program beginning this year. At the same time the government has revealed that it will before the end of this year issue the first order for a central solar concentration station with a power in the order of one megawatt, which, it is said, will be an important test of the use of solar energy to produce electric power.

While there are many methods for using solar energy, the French will give priority this year to the "central tower" type of system where the sun's rays are reflected through an array of mirrors on a central boiler, the steam from which drives a turbo-generator. Public funds for such systems this year will be about \$4 million, triple last year.

Other systems will also be developed. At the international level, France has launched "Operation Sahel" in which the government is supporting efforts by French industry to market abroad solar pumping stations and photovoltaic conversion installations. For this program, \$6 million will be spent over the next three years, \$2 million of it this year.

### Saudi Arabia Makes Major Commitment to Desalination

Desalination projects in Saudi Arabia account for 20 per cent of the country's entire second five-year development plan budget, according to Prince Mohammad Al-Faisal, head of the government's Desalination Agency. When current projects are complete, he said, the country will have 600 million gallons of fresh

water daily from desalination, and the stations will produce three times as much electricity as Egypt's Aswan High Dam.

Water produced by the stations might also be used for irrigation, the Prince added, pointing out that existing sweet water resources are inadequate. He also announced that his agency is conducting tests on the use of solar energy, with plans in the works to build within the next five years a town entirely dependent on the sun for energy.

The Prince has signed an agreement with the U.S. firm Sanderson and Porter Corp. under which the company will study, design and supervise construction of the second and third stages of a desalination plant to be built at Jubail. The plant will have a capacity of 175 million gallons per day and will include a 1.7-million-kw plant.

### New Zealand Will Continue Environment Impact Reports

New Zealand's new Minister of the Environment, Venn Young, has confirmed that the new conservative National Party government will require environmental impact reports on all projects with government involvement and will give them serious weight in decision making. Impact reports were instituted by the outgoing Labour government and there have been questions whether the new government would continue the system.

Venn also declared he would decide whether the reports should not be made even earlier in the planning process, citing such cases as an offshore gas exploration project in which major contracts were let before the environmental reports were considered. Some environmentalists believe the impact reports would be more effective if an appeal authority outside the government was provided for. Vann acknowledges that some statutory powers for the existing investigative Environmental Commission might strength-

en the system, but argues against setting down too much in legislation. "I see the commission as a catalyst to ensure that public opinion is well armed and the public is aware of matters taking place not only at the national level, but also at community level that could affect the environment."

During its tenure, the Labour government had to deal with a tough environmental impact report on its own plans to dam a fruit-growing valley on the South Island for a hydroelectric station. A plan was finally accepted that did minimal damage to the valley.

### Indian Ornithologist Wins J. Paul Getty Award

Salim Ali, 79-year-old Indian ornithologist, is the 1976 recipient of the World Wildlife Fund's \$50,000 J. Paul Getty Wildlife Conservation Prize. The award was made possible by a gift from Getty to the Fund and is intended to recognize outstanding achievement in the field of conservation. Last year's winner was Felipe Benavides, the Peruvian conservationist.

Ali told *World Environment Report* he will turn over his prize money to the Bombay Natural History Society, of which he is the resident, to help its wildlife preservation efforts.

At present, Ali is engaged in a crusade for the preservation of India's 20-sq.-km Ghana sanctuary near Delhi. Migratory birds come to the sanctuary in winter from as far as Vladivostok in the Soviet Union. Ali has urged the government to build a wall around the sanctuary and he has questioned the wisdom of building a 6-million-ton-per-year petroleum refinery nearby. This construction will not only upset the ecological balance of the sanctuary, he warns, but also threaten India's most famous showpiece, the Taj Mahal, which is 50 miles away down the Jumna River.



## French Environment Groups Oppose High-Speed Rail Line

Ten French conservationist groups have united in an effort to block construction of a high-speed rail line between Paris and Lyon, which is envisaged as a means for spurring economic development in France's southeastern regions. Calling the project a "technological monster created, like the Concorde, for prestige," a new central committee is coordinating the efforts of groups protesting the destruction of forest and farm land and the disruption of wildlife and groundwater in what they label an economically unsound undertaking.

The 250-mile rail line, accompanied by a 45-mile highway, power and telephone lines, and several quarries, would consume more than 8,000 acres of land. Its detractors claim the commerce handled by the new line would be only half that of a comparable highway. The national railway system replies that the project would be most profitable of all public enterprises now under consideration.

The French parliament is to vote in April on an environmental protection bill which if passed would require submission of an impact study before further action.

## Irish To Protect the Lakes of Killarney

Environmentalists trying to protect the area around Ireland's famous Lake of Killarney in County Kerry are facing two unusual problems. The area's oak woodlands, among the few remaining in the country are in danger of extinction because of the Sika deer and because of the spread of rhododendron plants.

A few years ago, the semi-official Agricultural Institute had to order farmers to move sheep from the Killarney area to preserve the deer. But now the deer are a threat to the trees because of their manner of grazing—the oak seedlings are killed

off before they can become established. The National Forest and Wildlife Service in an experiment fenced off a quarter acre to keep out the deer and found that the oaks and other growth have done well.

The rhododendron was introduced to Ireland about 100 years ago, the same time the deer were introduced. But these plants cut off sunlight from the oak seedlings and other plants. The matter is to be studied further in hopes of finding action that will protect the trees without harming the deer.

In a related matter, the National Science Council will provide treatment works in the town of Killarney to prevent pollution of the lakes. Local fishing interests have welcomed this involvement, but point out that industries that still discharge into the three lakes should also be curbed.

## British Government Supports Wind Power Development

The British government's National Research Development Corp. is giving financial support to the Wind Energy Supply Co. (WESCO) of Peacehaven, Sussex for research on wind power as a source of heat. Drawing on British helicopter technology, WESCO has designed a rotor-bladed plant for agricultural and horticultural uses. The present prototypes are hydraulic in concept, with the tower system as simple as possible and the energy conversion machinery at ground level.

The company's two basic types of windmills are the Oleo-thermal, producing only heat energy in the form of hot water, and the Oleo-electric, which can produce both electricity and a substantial amount of hot water as a byproduct of the hydraulic losses. The devices will be produced in sizes varying from 5 to 18 meters rotor diameter, the smallest intended for domestic use. The WESCO system is said to be particularly suited to heating greenhouses economically and efficiently. It has a flexible modular design.

## Environment Groups Petition To Block Uranium Exports to India

The Sierra Club, the Natural Resources Defense Council and the Union of Concerned Scientists early this month filed a legal petition to block U.S. export of nuclear fuel to India. The suit opposes plans of the Nuclear Regulatory Commission to send 40,000 pounds of uranium to the Tarapur Atomic Power Station near Bombay.

The petition cites inadequate safeguards to ensure India will not use byproduct plutonium to manufacture weapons and describes alleged highly dangerous health, safety, and environmental conditions at Tarapur. Radiation leaks have forced replacement of many of the plant's workers, often with poorly trained personnel, according to the petition, and the radiation has been measured in the bodies of fish-eating residents.

The petitioners hope their action will force major changes in U.S. nuclear export policy, charging that "the U.S., by fostering nuclear power growth around the globe, is providing the basis for nuclear proliferation and setting the stage for a world catastrophe."

Indian Atomic Energy Commission officials have vehemently denied the allegations regarding conditions at Tarapur. The officials point out that a U.S. team from the Nuclear Regulatory Commission and the Energy Research and Development Administration visited Tarapur in November and was satisfied with its findings. The facility's two reactors were designed and built by General Electric under license from the U.S. government and have built-in controls against radiation leakage.

The Indian officials insist that they have carefully monitored radioactivity in marine life and the fish-eating population and have even autopsied traffic victims without finding significant levels. Furthermore, the officials claim there is no question of India using the reactors to produce plutonium for a weapons program.



## Mollusc Filters Out Waste Oil

Soviet scientists have discovered that a small, heart-shaped shellfish found in the Caspian Sea is playing a key role in combatting oil pollution.

Researchers in the Azerbaijan Zoology Institute say that the "cardium mollusc," named for its heart shape, filters up to 15 liters (about three gallons) of water a day. It absorbs food particles from the water but disposes of substances, including oil, that it does not need by wrapping them in an envelope of slime and dropping them on the seabed where shifting sands bury them.

## Irish To Make Useful Products from Pig Wastes

A team of scientists from Ireland's Agricultural Institute, An Foras Taluntais, has developed a process that promises to end the pollution of the country's lakes by untreated pig waste slurry from farms. This slurry has triggered a great increase in algae and microorganisms in Ireland's fish-

ing lakes, among the best in Europe. The new process not only processes the slurry into a premium, odorless, slow-release fertilizer, but also produces methane gas as a byproduct energy source. Further development is still to be carried out at a pilot plant to be built at Bailborough Cooperative Plant in County Cavan, but it seems likely the pig farmers will soon be able to dispose of their slurry to factories that will produce the fertilizer and gas.

## India Bars Plastic Containers

The Indian government has refused permission to the Delhi Food Product Manufacturers association to change from tin and glass food containers to plastic, particularly for oily or acidic foods. The Association conducted experiments that showed pickles stored in plastic became rancid, but that short-term storage of sweet preserves did not have an adverse effect. The government is conducting further tests to see if some varieties of drugs are also affected by plastic containers.

## Danes Urge Wind Power Study

A committee of the Danish Academy for Technical Science has recommended spending \$8 million on preliminary research into the use of wind energy to reduce dependence on imported oil.

Two types of wind power would be studied — 1) Big installations on the west coast of Jutland where the prevailing winds are from the west and northwest. It is calculated that 500 windmills with a wing diameter of about 150 feet could supply 10 per cent of Denmark's present energy needs; 2) Smaller units for isolated farms or homes. The committee estimates that an investment of about \$500 million in wind power installations would produce an annual saving of 600,000 tons in oil imports.

The committee proposed a five-year program consisting of a one-year preparatory phase and a review of results after three years. A final decision on whether to introduce wind power on a large scale would be made during the final two years. The committee's report has been sent to the Environment Ministry.

## Calendar...

**April 5-9**—International conference on the environment of human settlements. Brussels. Sponsored by World Environment Resources Council in preparation for Habitat.

**April 20-22**—Seminar on Technologies of the Utilization of Low-Calorie Fuels. Zlatni Piasatzi, near Varna, Bulgaria. Sponsored by the United Nations Economic Commission for Europe (ECE).

**April 26-29**—International Conference on Air Pollution. Pretoria, South Africa. Sponsored by the Department of Health of the Republic of South Africa.

**May 15-19**—International Conference. Kobe, Japan. "The Role of Local and Regional Government in Improving the Environment for Human Settlement." Sponsored by International Federation for Housing and Planning.

**May 16-20**—Fifth World Symposium on Water Desalination. Alghero, Italy. Sponsored by the International Federation of Chemical Engineers. Chairman is Prof. Anthony Delyannis of Athens Polytechnic.

**May 17-20**—Second International Exhibition and Conference—Hovercraft, Hydrofoils, Advanced Transit. Amsterdam. Sponsored by the Metropolitan Association of Urban Designers and Environmental Planners Inc., New York.

**May 17-22**—International seminar on long-term water management planning. Zlatni Piasatzi, Bulgaria. Sponsored by the UN Economic Commission for Europe (ECE).

**May 27-June 9**—World Environment Exhibition, Tokyo. Sponsored by the Japan Productivity Center and Nihon Keizai Shimbun.

**May 31**—Inter-Secretariat Meeting on Water Pollution. Geneva. UN Economic Commission for Europe.

**May 31-June 11**—Habitat 76. Vancouver, British Columbia. Sponsored by the United Nations.

**June 2-4**—Forum on Ozone Disinfection. Chicago. Sponsored by the International Ozone Institute.

**June 5**—World Environment Day. Sponsored by the United Nations Environment Programme.

**June 12-17**—Environment and Safety 76. Copenhagen. An exhibition and fair sponsored by Danish environmental authorities and national organizations.

**June 21-25**—Second International Congress and Exhibition of ISWA-ITALIA 76. Padua, Italy. Sponsored by the International Solid Wastes and Public Cleansing Association. Sessions on recycling; landfills; incineration and pyrolysis; sludge treatment; collection, transportation and street cleaning; hazardous waste, including legal aspects. Contact W. Lacy, EPA, Washington, D.C. 20460.





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## Senate-House Conference Restores U.S. Contribution to UNEP

**WASHINGTON**—The Senate-House conference on the U.S. foreign aid bill for fiscal year 1976 restored the full \$7.5 million that had been requested as the U.S. contribution to the United Nations Environment Fund. In its version of the bill, passed March 4, the House had cut this amount back to \$5 million (*WER*, March 15, p. 1). However, the Senate Appropriations Committee left the original amount in its version of the bill, and the restoration survived the conference on April 1.

This means, assuming that the full House and Senate accept the conference report as expected, that the Fund will receive \$3.75 million for the final quarter of FY '76, which ends June 30. Funding for the first three quarters has been at the \$5 million per year level (\$1.25 million per quarter) under the continuing appropriations bill. The full House was scheduled to vote on the measure on April 7, after this issue went to press.

The final version of the foreign aid bill also includes \$1 million added on an amendment by Sen. John Glenn (D-Ohio) for the International Atomic Energy Agency to strengthen its fuel monitoring program.

## Sharper Environment Focus Urged For UNEP by U.S. Delegate

**NAIROBI**—Delegates to the fourth annual meeting of the UN Environment Programme's Governing Council here were lectured sternly by the heads of both the U.S. and Chinese delegations.

Roy Morey, head of the U.S. delegation and a deputy assistant secretary of state, said the UNEP should not attempt to assume responsibility for all the world's problems and expressed concern the agency might be expanding its activities beyond its capabilities. He noted that recent recommendations for new programs in fields such as food and energy go far beyond what could be called the "environmental aspects of food and energy. . ."

When UNEP was launched at Stockholm, Morey went on, it was formed to deal with environmental issues. "Although we are satisfied with the general direction of UNEP," he said, "we are concerned about the approach to global problems."

On the question of funding for UNEP, Morey assured

the 250 delegates from 58 countries that the U.S. is as committed to the program today as it was at the inception. However, he pointed out that budgeting in the U.S. is an annual process, not monthly, and requests for more funds cannot be met immediately. Further, he pointed out, the U.S. government had been embarrassed in its requests to Congress for more funds because UNEP has in the past failed to spend the money already received.

He called upon UNEP to monitor closely the development of new programs so that they could be defended to national government when the need for more funds arises. National governments need complete information about UNEP's activities if they are to provide the necessary support, he said. (See story in this issue for the latest status of the U.S. contributions to the UNEP Fund.)

Wang Yueh-Yi, China's ambassador to Kenya, blamed the policies of the super powers for environmental pollution. In a scathing attack he said that "Alien domination and occupation, colonialism, racial discrimination, apartheid and neo-colonialism in all its forms continue to be the greatest obstacles to the full emancipation and progress of the developing countries."

"It is necessary," he added, "to wage a hard, protracted struggle before resolutions on paper become a reality. Imperialism, by the two great superpowers in particular, always tries, by every possible means, to put the numerous third world countries under its control."

"Only when the third world countries close their ranks, safeguard their state sovereignty, control their natural resources, develop their national economies through self reliance and strengthen economic relationships among themselves can the implementation of the (UNEP) Declaration and Programme of Action be assured."

He concluded that "therefore, the purpose of our discussion on environment and development should be to help and facilitate the developing countries' efforts to

(Continued on p. 4)

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## Colombians Plan Cleanup of Oil From Sunken Tanker

**BOGOTA**—Colombia's Augustin Codazzi Geographical Institute has asked the U.S. government for photographs of Colombia's Pacific Coast taken by the Earth satellite to help determine the damage caused by an oil spill which occurred in February when a Libyan flag oil tanker carrying 33,000 tons of crude and bunker oil sank near the border with Ecuador (*WER*, March 1, p. 8). Meanwhile, the Colombian government has earmarked \$333,000 to clean up the Pacific beaches.

Recovery of the ship, the "St. Peter," and its \$3 million petroleum cargo would cost about \$9 million, according to government estimates, and this is beyond Colombia's financial resources. Although the ship sank off the northern Ecuadorian port of Esmeraldas, it has since drifted north to within 15 miles of Tumaco, an important fishing port on Colombia's Pacific coast.

A study by biologists and engineers of the University del Valle in southern Colombia has recommended immediate clean up of tourist beaches in the area—large quantities of oil-soaked driftwood have already polluted one of the most polluted beaches at Bocagrande.

The study also recommends establishment of inspection sites near the sunken tanker to monitor the damage from the oil seepage, which could seriously affect oyster mangroves, shrimp farms and other coastal fishing resources. Eighty per cent of Tumaco's residents depend on fishing for a living.

## Japanese Complaints Inspire Vibration Control Measure

**TOKYO**—Complaints about noise and vibration accounted for 31 per cent of the pollution grievances in the most recent tabulation released by the Japanese Government. The government prepares this report every fiscal year, but it takes ten months to tabulate the results. Thus, the report was just released, which lists more than 79,000 complaints filed by citizens in every part of Japan, is for fiscal 1974. The number of cases was 8.9 per cent fewer than fiscal 1973, which in turn was 1.1 per cent below the previous year.

Japanese officials see the annual poll as a tangible means for measuring the extent of all types of pollution and consider the results a valuable supplement to the data collected by the Environment Agency and other organizations. The drop in complaints shows that pollution in Japan is gradually being brought under control, according to those responsible for the report, and also that many industries have been working at reduced levels during the current economic recession.

Another drop in complaints is expected in fiscal 1975, when production has remained considerably below capacity. Furthermore, many more Japanese manufacturing plants are now equipped with the latest pollution control equipment.

According to the latest poll, the ranking after noise and vibration was unpleasant odors (22 per cent), contaminated water (18 per cent), and air pollution (15 per cent). The most annoying pollution sources were listed as industrial plants (43 per cent), livestock farms (12 per cent) and construction operations (7 per cent). As expected, the complaints were concentrated in Japan's largest urban centers, industrial areas and the nearby residential sectors.

It is largely based on this 1974 report that the Environment Agency has submitted to parliament a bill to control vibration nuisances. The 27-article bill, it is hoped, will allow authorities to require a reduction in vibrations following complaints from those living near factories and construction sites.

The bill would authorize prefectures to establish vibration control standards along lines set by the Environment Agency and to designate areas where excessive vibrations will be considered a nuisance to the public. The bill would also give the agency power to designate just what type of industrial and construction vibrations would be controlled. Prefectural governors would be empowered to order the responsible party to reduce a vibration nuisance when it is considered to be reducing the quality of living conditions for nearby residents.

The governors would also be authorized to order those supervising road construction to reduce vibration or to stop the project entirely if this is not possible and the vibrations exceed standards established by the office for highway construction projects.

It is considered likely here that if the new bill becomes law it will pose a particular problems for the high-speed lines of Japanese National Railways. Residents along the routes of Japan's so-called "Bullet Trains" can be expected to lodge complaints under the new law when it is enforced.

A. E. CULLISON

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## Cairo: Population Pressures Threaten To Overwhelm Egypt's Capital

**CAIRO**—Although Egypt's capital lays claim to being the first planned city in the world, its problems today stem directly from a lack of planning. Every fifth Egyptian lives, works or studies in Cairo. Each day, close to two million people pour in and out of the city, and in some suburbs the population density reaches 150,000 per sq. km.

Although Egypt's economy still reels from its wars with Israel, ambitious plans are underway to transform the country into the main business and financial center of the Middle East. But continued migration into Cairo from the country threatens to overwhelm these plans as fast as they can be put to blueprint.

Efforts to stem the flow have failed, not just because as a capital the very nature of Cairo is magnetic, but also because the city has the bulk of hospitals, schools, factories and other services, many of which were designed only to handle two million people.

**Housing**—A prime example of these problems is housing. Although the government is building tens of thousands of units annually, thousands of families still live in single rooms. The large influx of foreign businessmen and their families makes the situation worse. Key money for a five-room furnished apartment is as high as \$50,000, with rents often passing \$1,200 per month.

One solution the government has come up with is to construct self-sufficient satellite towns around Cairo. Designed for 500,000 population, two such satellites are in the planning stage, and one—New Industrial City—is nearing completion.

**Congestion**—Transportation is another headache for government officials. Cairo has over 316,500 registered vehicles, plus an unknown number of horse and donkey-drawn carts. The combination of inadequate parking spaces and drivers with independent ideas often reduces six-lane streets to mere alleyways.

To relieve some of the strain, the city is planning to construct eight parking garages, complete with shopping centers, having a 6,000-car capacity each. And a 12-km monorail system through the center of town is to be built with an initial capacity of 12,000 persons per hour, ultimately expanded to 36,000. Government spokesmen also say a subway system will get underway shortly, and that additional pedestrian bridges will be built at key intersections. The bridges and first stage of the subway system will cost about \$150 million.

One obvious roadblock to the smooth flow of traffic in Cairo is the poor coordination and placement of traffic signals, which prevent meeting any kind of schedule by public transport, and cause uncertain intervals and overcrowded buses. A recent expansion of the bus fleet has failed to dent this problem. City officials say, however, that a scheme is being studied to install

automatic traffic signals connected to a central television network.

**Wastes**—Cairo's sewerage system is also pushed beyond its capacity and is a source of no little concern to health authorities. It is estimated that at least \$150 million will be required for sewerage disposal facilities over the next decade. With an expected turn-of-the-century population of 10 million, Cairo will have a sewage discharge of 2.3 million cubic meters per day.

Another big problem in Cairo is its telecommunications system. Officials admit the city's telephone system should have been replaced long ago. Complaints from foreign businessmen are stirring some reaction now, and the first steps have been taken to overhaul service. A ten-circuit telex center was opened in Cairo in February for business use, and agreements have been reached with several countries, including France, to help improve the telephone system.

*(Continued on p. 5)*

## Mexicans See Peril to Their Shrimp Fishing Industry

**MEXICO CITY**—A crisis in Mexico's shrimp fishing industry will force the closing of the country's Pacific waters to all shrimp fleets for at least four months this year in a "closed season" which may become an annual occurrence. And in the Gulf of Mexico, foreign fleets using nets with openings smaller than those permitted the Mexicans are causing a situation described by Mexican officials as "destructive" in what is called the world's richest shrimp area.

The director of Mexico's National Fishing Institute, Luis Kasuga Osaka, saying the Pacific waters are the "most over-exploited" in the world, is requesting a closed season beginning in April or May for all shrimp fishing, foreign and domestic, to allow newly spawned shrimp to mature to the 10 to 11 centimeter length used by commercial fishermen. The closing will last probably until Sept. 15, he said, but will be extended if the shrimp are not yet mature.

Mexico's 1,500 shrimp boats—1,000 in the Pacific—have averaged 45,000 tons of shrimp annually in recent years, but last year the catch was 5,000 tons below the 1974 amount.

Drought conditions on land abutting the Pacific led to a decrease in the run-off water carrying needed nutrients into the sea to supply coastal marine life, Kasuga said. Last year, a prohibition on shrimp fishing was imposed suddenly on August 14, and only rescinded after the shrimp reached commercial size.

Kasuga said another problem is the use by some

*(Continued on p. 5)*



## Hungary Passes Comprehensive Environment Protection Law

**BUDAPEST**—The Hungarian Parliament passed a new environmental protection law March 19 that provides a legal framework to enforce antipollution decrees.

Hungarian Minister of Construction and Urban Development Jozsef Bondor told the parliament that the development of industry and modernization of agriculture have caused increased air and water pollution in the country. He declared that environmental protection measures should be better observed and that group interests or even those of the national economy should respect the protection of the working people.

Bondor said that the new law differs from earlier measures in that it does not protect just one or another environmental sector but "instead places the entire human environment under the force of law." At the same time, he added, the new law does not neutralize earlier measures in specific fields, such as the protection of air and water.

The minister said the new Hungarian five-year plan provides more than 20 billion forints (about \$1 billion at the official exchange rate) for environment. Additionally, he said, a high-capacity garbage destructor will be constructed in Budapest at a cost of several hundred million forints. The new law calls for central control and supervision of all such work.

He declared that Hungary is cooperating effectively with neighboring countries on environmental matters. For example, he said, Hungarian water reserves come from catchment areas in several neighboring countries—

referring to the Danube River, as well as the Neusiedler Lake between Austria and Hungary. Much of the water from such sources is polluted, the minister added.

Coordinated planning, coupled with resolute action, could solve Hungary's environmental problems without damaging industrial development or curbing the rising standard of living, Bondor declared.

The minister said that sulphur-related air pollution in Budapest in 1973 was less than half that of 1969. A law providing fines for industries polluting the air was passed last year, he noted, and in 1974 and 1975 some one billion forints were spent on modern furnaces equipped with scrubbers and dust separators, as well as monitoring equipment.

Only half the sewage treatment plants projected in Hungary's last five-year plan (1971-75) were actually built, according to Istvan Gergely, chairman of the National Water Conservation Office. He added that 65 to 66 per cent (seven million) of the country's population were linked to public water supply by the end of last year. Another million will be hooked up by 1980, he said. Gergely urged that the development of sewage treatment systems be speeded up and said that by the end of the current plan period (1980) some four million people should live in areas with sewer systems.

The current plan period includes a new system of treatment systems around Budapest. The projects are planned to meet the needs of the year 2000, when two million cubic meters per day of sewage are expected to be discharged into the Danube from the Hungarian capital, compared with today's flow of one million. Construction of the systems will require about ten billion forints (about \$500 million at official rates). **WILLIAM MAHONEY**

## EEC Acts on Environment Study PCBs and Radiation Protection

**BRUSSELS**—The Council of Ministers of the European Common Market (EEC) has allocated 16 million units of account (about \$19 million) to the community's Environmental Research Programme for the period 1976-80.

The funds are to finance research in four priority areas: pollutants and potentially toxic chemicals; information management (with particular reference to chemicals); reduction and prevention of pollution and nuisances (e.g., the application of clean technologies); protection and improvement of the natural environment.

In another matter, the Council of Ministers is expected to adopt within the next few weeks a directive severely restricting the use of polychlorinated biphenyls (PCBs) in the community. The proposal was originally presented in 1974 and endorsed by both the European Parliament and the community's Economic and Social Committee. One of the three largest manufacturers of PCBs in Europe has already announced that it will stop producing and selling this product, although it has not set a date.

At another recent meeting, the Council of Ministers

decided that 39 million units of account (\$47 million) should be spent between now and 1980 on scientific and technical studies to improve radiation protection.

### UNEP Meeting (continued from p. 1):

develop their national economies. They should also be able to benefit by the experience of other countries and propose measures to prevent pollution and improve their environment."

The two-week meeting here, which ends April 14, is reviewing the performance of UNEP in light of the recommendations adopted by the third Governing Council meeting last April. The delegates are also discussing such issues as environment and development, irrational use of natural resources, problems of shared natural resources, UNEP's institutional arrangements and support for the new human settlements foundation. Roy Morey urged that the Governing Council should await the outcome of the June Habitat Conference in Vancouver before making commitments in the settlements area.



## FAO Will Help Third World Exploit Fishing Resources

**ROME**—If the current UN Conference on the Law of the Sea in New York reaches agreement giving countries a 200-mile "economic zone" off their coasts, a major role is seen for the UN's Food and Agriculture Organization in helping third world countries develop their fisheries with the support of established fishing powers.

This view was strongly supported by many of the 60 representatives of large fishing companies who met here last month under the auspices of FAO's Working Group on Fisheries Industries Development. Many participants in the meeting expressed keen interest in new joint ventures with governments of developing countries to harvest untapped fish resources. But they said they needed FAO's expertise and field organization to carry out preliminary feasibility studies.

FAO is already acting as a broker in negotiations between developing countries and private companies or other governments. If the Law of the Sea Conference reaches the expected conclusion, developing countries will find themselves in control of much of the unexploited fish resources of the world. Many undeveloped fisheries are off the coasts of such countries—both coasts of South America, the west coast of Africa from Gibraltar to the

Congo, south of the Arabian Peninsula, in the Bay of Bengal and the southwest Pacific. The countries of these regions today lack the funds, knowhow and manpower to develop these resources on their own.

Philip Appleyard, secretary of the FAO working group, told *World Environment Report* "We in FAO will of course help the developing countries, particularly the small coastal and island nations, to develop and exploit their new rights and opportunities. And companies from big, rich countries, who were diffident in the beginning, are now increasingly looking to FAO to facilitate the future dialogue with developing countries about joint ventures in harvesting the resources of the new economic zone."

Although the working group has been in existence for only two years, it has already proved to be a valuable catalyst for joint ventures and for attracting investment into the developing countries, according to Appleyard. FAO can do more than determine certain areas of general interest and point out their potential, he said, it can pinpoint specific areas and help gather the basic elements to evaluate the viability of a specific proposal. And the agency can supply experienced industry people, now serving with FAO, to follow such ventures from their inception. FAO's long association with development banks is another reason it is able to play this role, he added.

VITTORIO PESCIALLO

### Cairo Report (continued from p. 3):

**Decentralization**—Government officials are all in agreement, however, that none of Cairo's problems will be solved unless migration is stopped and the government decentralizes. All ministries are in Cairo, except the Ministry of Maritime Transport. Egypt's bureaucracy can trace its red tape back thousands of years, and solutions to even the most minor problems are usually sought in Cairo itself. Although a system of local government was introduced ten years ago the daily influx of people to the various ministries suggests this system has yet to reach peak efficiency.

During the 1960's an attempt was made to build a self-sufficient suburb for ministries and public services. While a number of buildings were completed, the project failed because the ministries and services simply refused to move.

Half of Egypt's universities are in Cairo, and 280 of 800 industrial projects are in the city. More than 60 per cent of the city's professional services are in a 3 sq. km area in the center, as is the principal shopping area. The rest of the city, 190 sq. km, is left without the necessary services, and residents are forced into the center, adding to the overburdened transport system.

Despite government discouragement, people continue to flock to the city from rural areas in hopes of easy employment and an opportunity to raise their standard of living. But more often than not they are disappointed and end up in the slums on the public welfare rosters.

JOHN M. BRADLEY

### Mexican Shrimp (continued from p. 3):

foreign fleets of nets with holes smaller than the 2¼-inch minimum required of Mexican shrimpers, which means they can catch more, though smaller, shrimp.

Off the coast of Campeche in the Gulf of Mexico, and in the Laguna de Terminos, the white shrimp faces extinction because of over-fishing with illegal small nets, according to Alfredo Duran Zalub, director of the state fishing cooperatives. Both the U.S. and Cuba have much larger shrimp fleets than Mexico and use nets with holes as small as ¾ inch. Beside fishing in the Gulf, a foreign fleet of 80 to 100 outboard motor boats drags the Laguna, where the shrimp spawn, according to Duran, further endangering the industry. Foreign fleets have ignored a new Mexican law that requires them to sign contracts with Mexican shrimp cooperatives, paying the co-ops a certain amount per kilo to protect the co-ops' income, he added.

A fishing industry engineer, Victor Lomeli, has suggested that all Mexican fishing activities be placed with one organization, as is done in successful fishing nations such as Japan, Cuba and Spain. He observed that Spain, with 2,000 km. of coastline caught 1.3 million tons of fish in 1974, while Mexico, with 10,000 km., caught only 349,000 tons. Lomeli said that the fish now caught with the shrimp—and thrown back—could be processed into fish meal for the undernourished Mexican population. On a 45,000 ton annual shrimp catch, 750,000 tons of other fish are now thrown back into the sea, he said.

KATHERINE HATCH



## In Brief . . .

### Study Finds U.S. Energy Use Is Twice West Germany's

The U.S. consumes more than twice as much energy per capita as West Germany according to a report prepared for the U.S. Federal Energy Administration by Stanford Research Institute. Although per capita income is only 40 per cent higher in the U.S. than in West Germany, the report says, the U.S. consumes nearly four times as much energy per capita for transportation, over twice as much for residential use, nearly twice as much for commercial uses and more than 1½ times as much for industry. Six of the most energy-intensive industries in West Germany, including food, paper, chemicals and steel, consume 20 to 60 per cent less energy per unit product value than their U.S. counterpart, the study notes.

Among West Germany conservation practices cited in the study are selective home heating, in which only 45 per cent of the residential floor space is heated; improved utilization of electric generating capacity through attractive off-peak rates that encourage storage of heat at night for daytime space heating, and use of industrial waste heat to generate electricity. About 29 per cent of electricity in West Germany is privately generated for internal consumption, compared with about 6 per cent in the U.S.

The report concludes that its findings suggest the U.S. could conserve considerably more energy than previously believed and calls for similar studies of other industrialized countries.

### Swiss Dam Will Create New Wildlife Preserve

The Swiss have built a dam in the lower Reuss Valley that will form a 9-

km long lake, a vast natural preserve for water-fowl, while simultaneously providing electric power and flood control in an area that has been subject to annual inundations in the past. The project has been planned to offer nesting possibilities and food to as wide a variety of birds as possible. Natural cover is provided by scrub-covered moor land surrounding the artificial lake, and an alder forest has been planted. Alders have heretofore been all but unknown in Switzerland.

Eight islands are in the upper end of the lake and there are shallow flats for wading land birds, slightly deeper areas for shallow diving birds and deep waters for deep diving species. One island has been made swan-proof with steep concrete embankments to permit river and lake swallows to breed undisturbed. Visitors are permitted, but at a safe distance from the birds.

### Central Disposal Required for Danish Drugstore Wastes

Remainders of medicines and other wastes from Danish drugstores will in future be destroyed centrally. The Druggist Association has accepted new regulations proposed by the Environment Ministry to control disposal of these wastes. A state-operated chemical destruction plant has increased its capacity to be able to incinerate the drugstore wastes. The public has also been encouraged to clear out old or surplus medicines from private homes. Drugstores are providing special containers to collect wastes brought in by the public.

### Pollution Causes 70,000 Deaths In Mexico Each Year

A Mexico City physician told the

recent Mexican National Meeting on Health and Social Security in Merida that atmospheric contamination causes 70,000 deaths in Mexico each year and contributes to the ill health of many more. Dr. Eduardo Echeverria said another 600,000 persons suffer from infections due to poor living conditions caused by poor economic conditions. This poor health leads in turn to poor attendance at school or work and to an attitude of "giving up." The conference participants agreed that 24 million Mexicans—two-fifths of the population—live in precarious conditions of marginal health.

### Big Switch to Diesel Power Seen for Colombia's Vehicles

Colombia's National Institute of Transport (INTRA) predicts that 70 per cent of the nation's vehicles will be diesel driven by 1985. Herman Reyes, INTRA's director of equipment, said that official estimates show gasoline motors will be replaced by diesels in 35 per cent of Colombia's automobiles in four years. Colombia is facing a petroleum import bill of \$69 million this year, and the use of diesels is seen as a means for reducing both petroleum consumption and air pollution.

### Brazilian Scheme Would Make Alcohol as Fuel Supplement

The first large-scale project for producing manioc alcohol to supplement Brazil's gasoline supply is now awaiting approval from the National Alcohol Council. SINOP, the company proposing the project, re-drafted its plans to include a local manufacturer for the equipment after its initial proposal to import the



equipment from Germany was rejected.

The scheme would be an integrated project, from planting the manioc (cassava) through making the alcohol. The project would be in the Mato Grosso, would employ 2,000 persons and would have an initial production of 100,000 liters per day.

The SINOP proposal is in response to the government's plan to use alcohol as a gasoline supplement in a concentration of 10 to 25 per cent as a means of reducing Brazil's heavy dependence on imported petroleum. Brazil has a well-developed sugar cane alcohol industry, but extraction from manioc is still in the primitive stage and the government is eager to encourage development.

The Alcohol Council projects long-range manioc prices of \$21.30 to \$23.40 per ton and an alcohol price of 12 to 13¢ per liter. A ton of manioc can produce 180 to 200 liters of alcohol. Sugar cane is \$10.60 to \$13.80 per ton, but produces only 65 liters of alcohol at 14¢. Regular gasoline now sells for 38¢ per liter in Brazil, and alcohol for 24¢.

### Greece Looks at Heavy Fuel Ban To Protect Acropolis Monuments

The Greek government is considering a ban on heating by means of mazout (heavy fuel oil) in apartments surrounding Acropolis hill in an effort to prevent further pollution damage to the 2,500-year-old historic monuments. A six-member committee set up last year to study means for preventing further deterioration of the Acropolis said tests showed the greatest danger to the monuments was from air pollution. The committee found that erosion is "ten times as much in winter as in summer," and suggested the ban on mazout in centrally heated apartment blocks around the hill. The alternative would be electric heating or low-sulphur fuel oil.

A UNESCO report last year also singled out air pollution as the major

threat and demanded immediate measures to prevent "the monuments' loss forever."

The committee, which is working under a \$1.6-million government antiquity rescue program, said that atmospheric pollution has decayed the marble surfaces at some points up to 1/3 cm. deep. It added, however, that its studies show the proper steps will have positive results. "If we act now the Acropolis treasures, contrary to expectations, can be saved," the committee report said.

### Czechs Recycle Pig Manure and Paper Wastes into Fodder

Research in Czechoslovakia is leading to the recycling of pig manure into fodder or fertilizer. In the Czech process, the manure is mixed with paper mill waste water. The nitrogen and phosphorous nutrients which are abundant in the manure promote the biological purification of the paper mill wastes, while the constituents in the mill wastes promote the breakdown of undigested remnants of fodder in the manure.

The resultant sludge contains digestible nitrogen compounds and has a higher vitamin B-12 content than fish meal. In a test being carried out at a north Bohemian paper mill, 560 cubic meters of manure, the daily output of 40,000 pigs, is mixed with the mill waste waters. The digested sludge is centrifuged and pressed into pellets that can be used as fodder or fertilizer. Output is 180 metric tons per day.

### Sewage Treatment Plant To Be Built for Bratislava

Action to lessen the pollution of the Danube over the period 1976-80 has been approved by the Slovak government. A central sewage treatment plant for the Slovak capital, Bratislava, is to be built near Vrakuna, with the primary stage to be finished by 1978 and the second-

ary stage to be finished by 1981. A second treatment plant is to be built in 1978-83 in Petralka on the Danube opposite Bratislava with a capacity of 132,000 cubic meters. A mechanical - chemical - biological treatment plant is to be built by the Slovnaft oil refinery by 1981, and two more industrial waste water treatment plants are to be built by two Bratislava factories.

### Poll Predicts Big Fuel Savings From Rio's New Subway

A traffic poll has shown that the first line of Rio de Janeiro's new subway system will save the country \$115 million in petroleum imports per year as passengers switch from cars and buses to the electrically operated subway, according to Metropolitana, the company building the system. The calculations were based on the estimated number of cars and buses covering the daily route between the downtown and the residential areas to the north and south, at an average of 6.5 km per liter of gasoline and 2.5 km per liter of diesel fuel. The main problem with this reasoning is that Rio has been building its subway for six years and at the rate work is going local residents fear all this "would-have-been-saved" petroleum "will-have-been-wasted."

### Austrian River Life Protection Seen as Superior to Neighbors

Conditions along the Danube as it passes through Austria compared with those in West Germany demonstrate the contrasting attitudes in the two countries, Austrians believe. More than 270 fish species flourish in the Austrian Danube and in other Austrian rivers. Destruction of riverside areas for construction or intensive farming is avoided as far as possible so that the many varieties of river life, such as beaver, otters and frogs, abound in Austria in greater range than elsewhere in Europe.



Away from the rivers, especially in the Austrian Alps, there are more bears, mink and squirrels than in most neighboring countries. Hunting and shooting are controlled by voluntary associations and there are legal penalties for unauthorized shooting or tree felling.

In West Germany, partly because the various states have dissimilar policies, the amount of irresponsible hunting is much higher. About 250 species of wildlife are dying out in Germany as a result, including brown bear, wolves, mink and squirrels of all varieties. Moles and newts are disappearing through extensive trapping, and frogs and toads are becoming rare because of riverbank development and farming. Thirty-five types of fish have died out from water pollution; destruction of hatching areas is sharply reducing the number and variety of birds and insect life, while 21 types of bats have disappeared from the German countryside.

### Boston Environment Firm Forms International Division

Metcalf & Eddy, Inc., the Boston-based environmental engineering firm, has formed an International Division. The new division already is working on projects in Canada, Brazil, Saudi Arabia, Lebanon, Iran, India, Thailand and Japan involving water treatment and distribution, air pollution, irrigation, community planning and airport design. It has submitted proposals for additional projects in Brazil, Jamaica, Egypt, Greece, Saudi Arabia, India, the Philippines, Syria, Spain and Australia. The new division will have full access to all of Metcalf & Eddy's facilities, according to the company's announcement, and will benefit from the environmental engineering group of Research-Cottrell, Inc., Metcalf & Eddy's parent company, which has operating units in Hawaii and various other parts of the world.

### Electric Train Transport Planned for Bogota

Seven Colombian engineering firms are studying routes for a new transport system in Bogota, which will be based on electric trains and will substantially reduce the capital's traffic and pollution. Bogota has only 11.6 per cent of the population, but accounts for 35.6 per cent of Colombia's vehicles. Earlier plans to build a subway have been rejected as too expensive.

The metropolitan trains will extend north, west and southwest from downtown, following existing tracks of the aging suburban railroad system. Preliminary studies show the electric train system will solve Bogota's transport problems through the rest of the century.

### Philippines Builds Nuclear Plant

The largest credit ever given by the U.S. export-Import Bank has been granted to the Philippines to help finance the country's first nuclear power plant. The credit—more than \$277 million—will go towards a total project cost estimated at \$616.4 million. The plant will be built by Westinghouse on Luzon Island, about 75 miles west of Manila.

### Mexico and U.S. Meet on Plans To Protect Marine Animals

Marine scientists from Mexico and the U.S. have met at La Paz, Baja California Sur, Mexico, to lay the foundations for future bilateral treaties on the protection and preservation of mammals and other sealife peculiar to the Gulf of California (Sea of Cortez) and the tip of the Baja California peninsula where the Pacific meets the Gulf. The group formed a Center for Biological Investigations of La Paz to be supported by both governments and educational institutions of both nations. Among the unusual marine life of the area are seven species of

seals—the only place with such a variety—sea elephants, and dolphins. Bernardo Villa of the Biological Institute of the National Autonomous University of Mexico, headquartered in Mexico City, was a Mexican spokesman at the meeting.

### Research-Cottrell Buys Part Of Belgian Firm

Research-Cottrell, Inc., of Bound Brook, N.J., has acquired 25 per cent of Hamon-Sobelco, S.A., a privately owned Belgian company. Research-Cottrell has had an exclusive license from Hamon for the design and sale of natural and mechanical draft cooling towers in the U.S. and Canada. The new arrangement extends the license agreement and permits the company to market together in Australia, Japan, Mexico and South America.

Research-Cottrell claims to have constructed or to have under contract more than half the natural draft cooling towers in the U.S. It entered the mechanical draft market last year. Hamon-Sobleco is credited with designing the first natural draft tower.

### Delhi Houses To Burn Methane From Digesting Sludge

Tenders have been invited for a project to build pipelines to supply methane gas from digested sewage sludge to 1,000 houses in Delhi, India. Plans are to extend this service to 10,000 houses over the next four years at a cost of \$1.8 million. Impetus for the scheme is the fact that bottled petroleum gas now costs the Delhi householder \$4.30 per 1,000 cu.ft., compared with an expected \$2.40 for the methane.

Capacity of the treatment plant, where the sludge spends 25 days in the digestion tanks, is 500,000 cubic feet per day. The digested sludge will be used for fertilizer and the purified water for irrigation.





# World Environment Report

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## Tolba Warns UNCTAD Not To Forget Environment in Favor of Development

*NAIROBI*—Mostafa Tolba, executive director of the UN Environment Programme, told some 3,000 delegates representing 153 nations at the fourth session of the UN Conference on Trade and Development here this month that the relationship between environment and development is intimate, inevitable and inseparable. "They are two sides of the same coin," he said.

Any attempt to promote development without taking into account environmental implications erodes the foundation for long-term sustained development, he declared. The UNEP chief said the development process has environmental consequences that raise questions such as whether they are so serious as to negate the benefits of development.

At this key meeting of UNCTAD a confrontation is anticipated between Third World nations (the "Group of 77"—actually about 110) and the "Group B", or developed countries on many issues, one of which is trade-linked development.

Dr. Tolba stressed that "since development should be both sustainable and beneficial, UNEP has promoted the concept of environmentally sustainable development, or eco-development." But he added, "in applying this concept it must be remembered that hundreds of millions of people are without adequate food, shelter, clothing or basic health and educational facilities." Unless these basic needs are met, the entire human environment cannot be safeguarded, let alone enhanced, he said.

## Disarmament Meeting Fails To Agree On Environment Warfare Ban

*GENEVA*—The 30-nation Geneva Disarmament Conference adjourned here April 23 without agreeing on a planned treaty to ban manipulation of the environment for war.

A draft treaty had been tabled jointly by the U.S. and the Soviet Union last August. The conference is expected to reconvene later this summer, but most delegates doubt agreement on such a treaty could be reached in time to be submitted to this fall's UN General Assembly in New York. Nevertheless, U.S. Ambassador Joseph Martin,

Jr., told the closing session that "it is the hope of my delegation that the detailed and useful consideration of the draft environmental warfare convention this spring will provide a sound basis for productive treaty negotiation during our summer session."

He said the statements made have "reflected serious and thoughtful consideration of the best means of dealing with the danger of environmental modification for hostile purposes."

"The hostile use of certain environmental modification techniques, such as generation of earthquakes and tsunamis, climate modification and steering or intensifying hurricanes, would result...in widespread, long-lasting or severe destruction, damage or injury. The draft convention is designed to ban all hostile uses of such techniques," Martin said.

"On the other hand," he continued, "the hostile use of certain other techniques, such as precipitation modification, would not in all cases be expected to result in widespread, severe or long-lasting damage...and therefore hostile uses of techniques in this category would not necessarily be banned."

Martin said it is his view the draft would prohibit use of herbicides as a means of destruction, damage or injury if the effects were widespread, long-lasting or severe. An upset of the ecological balance of a region through such techniques would be, at minimum, a widespread effect, he said.

But he added that the convention would not affect the use of herbicides for control of vegetation within military bases and around their immediate defense perimeters. He noted that in April 1975 the U.S. had renounced as a matter of policy the first use in war of the herbicide applications that would be covered by the convention.

WILLIAM MAHONEY

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## Ghana: Environmental Problems are the Basic Ones of Existence

*ACCRA, Ghana*—The World Health Organization (WHO) and the Swedish International Development Agency in cooperation with the government of Ghana launched a campaign here last month aimed at eradicating communicable diseases. According to Dr. K. Ward Brew, head of the epidemiology division of the Ministry of Health here, 30 per cent of all deaths in Ghana are caused by these diseases, which include smallpox, polio, tuberculosis, measles, whooping cough, tetanus and diphtheria.

Smallpox and diphtheria have become very rare, but measles and whooping cough—said to attack half the children in Ghana—tuberculosis and polio are more common.

Some of this is due simply to the fact of Ghana's tropical location, but, according to Dr. K. B. Asante, Ghana's Ambassador to Geneva, "The major problems in the physical human environment in Ghana are not those caused by industrial pollution spills from huge tankers spoiling the beaches, but the simple elementary ones of human excreta and the removal of disease-bearing organic matter from drinking water."

As part of the effort to control these problems, the government's Environmental Protection Council opened an exhibition here last year which has since been touring different regions "for the entire population to see and learn about how they create environmental problems and how they can help solve them," according to a Council official.

The exhibition stresses the problems caused by a growing population, including those related to urbanization and the resulting overcrowding and lack of facilities. Also highlighted are the consequences of uncontrolled industrialization, such as the effects of the siting of a sugar factory on the Volta River. Children downstream of this installation are reported to have become ill as a result of drinking water polluted by the factory and by sewage.

The successful exploitation and development of the Volta River and its basin have given Ghana some industrial and agricultural growth. Construction of the dam has made available abundant cheap hydro power for factories and mines; the power has been a main attraction for new industries, such as the Valco Aluminum factory.

But evidence now exists showing that Volta Lake, one of the largest man-made lakes in the world, is turning these assets into liabilities. Water-borne diseases are increasingly plaguing villages and towns on the lake front. The lake is a breeding ground for the snail that transmits bilharzia, which is further spread when villagers urinate in the lake. One lake village, Bator, is reported to have a 30 per cent bilharzia rate.

Officials of the Volta Lake authority, which is in charge of all activities connected with the Volta River Project, admit that health hazards in the basin have increased. A Volta River Research Institute has been set up to conduct research on problems associated with the

lake. The health aspect of this research is geared to epidemiological surveys to establish a system of surveillance and to develop appropriate control measures. Continuous tests for the parasites in blood, skin, urine and stool, as well as serologic tests, show the disease is gaining ground.

As well as paying particular attention to the life cycle of the bilharzia host snail, the Institute is studying malaria, trypanosomiasis and onchocerciasis. Insecticides, weed control and periodic spilling of water from the lake have been found to be the best means for controlling spread of these diseases.

"But use of chemicals usually has some effect on the ecology of the area," said an Authority official, "and therein lies our difficulty."

By any standard, the lot of villages along the lake front has been improved through the Volta resettlement scheme. But unless the health hazards are attended to, it is feared settlers may begin to migrate into the country's urban centers where they will aggravate the already serious problems of the cities.

Another problem facing the Authority is how to maintain the boom in fish population related to the great amount of rotting vegetation left following the lake's creation in 1965.

According to Dr. Letitia Obeng, director of the Aquatic Biology Institute of the Council for Scientific and Industrial Research, the depletion of this vegetation has meant a dwindling of the fish supply. The Research Institute has been investigating fishery development and planning, fishery biology, limnology and general biology, as well as methods for using fishing gear, fish processing and fish marketing to improve the fish stock and increase the catch, which is now 45,000 to 60,000 tons annually.

N. ADU KWABENA-ESSEM

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## Water Supply: ECE Warns of Increasing Shortage in Future

GENEVA—UN Economic Commission for Europe (ECE) experts warned in a report released May 10 that pollution and the demands of modern living are diminishing Europe's water supplies to the point where some states will face a serious shortage by the year 2000. In some countries, water supply already does not meet national needs, the experts found.

The report notes that since "water has become in the space of 30 years a commodity with a price ticket," most countries are now launching drives to curb pollution and increase water resources. These programs include fines for polluters, prospecting for untapped groundwater, and crash construction programs for treatment plants.

Water supplies no longer meet demand in East Germany, Hungary, Cyprus, Malta and the Ukraine, according to the report. Countries that will face shortage by 2000 include Belgium, Bulgaria, Luxembourg, Poland, Portugal, Rumania and Turkey.

The report declares that "as societies grow wealthier, people use more water and the amount of usable water has actually been reduced in some countries by pollution, especially around urban and industrialized centers where agriculture is highly developed." Agriculture accounts for about 50 per cent of total pollution where it is the predominant activity.

The ECE experts also passed out compliments. In Britain, the report notes, water quality has continued to improve, with 77.4 per cent of the total length of rivers now described as "good." Austria and West Germany have avoided serious deterioration of water quality through incentives to reduce pollution and construction of treatment plants, the report says. The ECE also cites Yugoslavia for its investment in treatment plants; The Netherlands now treats more than 50 per cent of its domestic and industrial wastes and expects this to rise to 95 by 1985.

France, the report says, has built more than 1,800 water treatment plants; Switzerland, with 583 plants in service and 204 under construction, aims at providing more than 60 per cent of its population with treatment plants. The U.S. spent \$5.5 billion on industrial and municipal purification systems since 1973, the report notes, and will triple the amount by 1978.

ECE last week held a water management seminar in Zlatni Piasatzi, Bulgaria, for engineers, scientists, economists and city planners from most European countries. The seminar was designed, according to an ECE spokesman, to contribute to development of long-term water management planning at the national and international level and to constitute a major ECE contribution to the UN Water Conference to be held next year in Buenos Aires.

An ECE paper prepared for the seminar declared that water management development depends on three decisive factors: (1) the natural conditions of the country in question, i.e., the extent of ground and surface water resources, (2) the growth of the national economy and

population, as well as standard of living, (3) the urgent requirement to ensure an adequate living environment, one of the main components of which is water.

Advance planning for water management should extend at least 15 to 30 years, a paper prepared for the seminar declared, and often for 50 years and more.

WILLIAM MAHONEY

## Irish Bill Would Give Local Control of Water Pollution

DUBLIN—The Irish Government has proposed a major new bill on control of water pollution in the Irish Republic. It provides for fines up to \$10,000 and imprisonment up to two years. The aim is to control rivers, streams, lakes, canals, reservoirs, ponds, water courses, tidal areas and, as far as possible, beaches, river banks, salt marshes and even a temporarily dry bed of a river or stream.

Industries, business and some farming operations will have to obtain government licenses to discharge effluents into rivers, streams or sewers. Conditions of the license would relate to the nature, composition, temperature, volume, rate and location of discharge.

The bill has been strongly criticized by environmentalists because it would give responsibility for implementation to local authorities who have themselves often been accused of contributing to pollution by channelling sewage into rivers and streams. Local government authorities would also be given power to dictate safety measures to firms or individuals storing "poisonous, noxious or polluting matter."

However, under the bill—the Local Government (Water Pollution) Bill of 1976—the Minister for Local Government would enforce new standards for the treatment of sewage from towns and villages. In some rural areas there are no treatment plants and raw sewage is dumped directly into streams; it would cost some local governments a great deal to rectify this.

The bill appears three years after an inter-departmental working group published a comprehensive report on pollution. It is designed to ensure a satisfactory standard for all inland waters and the sea up to high water mark and to fulfill Ireland's obligations as a member of the European Common Market. It is one of the major developments in a 12-month period that has seen more environmental concern in Ireland than ever before.

It is considered probable the bill will be amended to reflect the demands of environmental groups who want some form of watchdog control over the local authorities. These same groups also say they will suspend judgement on the bill until they see how vigorously it is enforced.

One group, the Anti Pollution Committee for Irish Rivers, formed by sports fishermen, has been especially critical. According to Gerry Keating, the group's presi-



dent, the Department of Local Government is "the worst polluter in Ireland."

Under the new bill, Keating told *World Environment Report*, the Minister for Local Government "is giving himself a license to decide who shall be allowed to pollute. His department has built housing schemes around the country and continues to do so without adequate pollution control or effluent treatment systems."

Within the department, *WER* has learned, Parliamentary Secretary Oliver Flanagan has been given special responsibility for environment. This is seen as a first step toward creation of a Minister for the Environment.

In a related development, the government's Industrial Development Authority has published the results of a two-year study of the relation between industrial development and pollution in the Irish Republic. The detailed study, performed by the Institute for Industrial Research and Standards, an independent research group financed by the state, found that older established industries, particularly in agriculture and chemicals, have a poor record of water pollution control. The study also found seven incidents involving air pollution damage and identified 51 operations causing air pollution nuisance.

Commenting on the report, the Industrial Development Authority said "the findings indicate that almost without exception, there has been no sign of environmental pollution in any of the new industries brought into the country in the past five years by the Authority."

TOM MacSWEENEY

## Environment Groups Push U.S. Money For UN's Environment Fund

*WASHINGTON*—Several environmental groups, including the Sierra Club, the National Wildlife Federation, the Natural Resources Defense Council, the National Parks and Conservation Association and the Environment Forum, have organized an effort to encourage Congress to increase the U.S. contribution to the UN Environment Fund to at least \$10 million for Fiscal 1977.

The effort is broadly directed at Senator Inyoue's subcommittee of the Senate Appropriations Committee, which is now conducting hearings on the Fiscal '77 foreign aid appropriations. The House Appropriations Committee's Foreign Operations subcommittee, headed by Otto Passman, has already completed its work on the bill, and went along with the White House request for only \$5 million for the UN Fund.

At this writing, the foreign aid appropriations bill for Fiscal '76, which gives the Fund \$7.5 million (*WER*, April 12, p. 1), has still not received final action, pending resolution of a dispute with the White House over military aid.

So far, U.S. contributions to the Environment Fund have been running well behind the \$40 million pledged when the Fund was established for the five year period ending next year.

## Colombia's Free Port Plans Seen As Environmental Model

*CARTAGENA, Colombia*—Once the richest port on the Spanish Main, this city is now Colombia's favorite beach resort and a major tourist attraction. But even with a construction boom, unemployment is a high 22 per cent in Cartagena. While industrialization is one obvious solution, it is seen as carrying the threat of pollution—the existing small industrial center, although away from the tourist area, has already severely polluted the bay and destroyed most of the city's once-abundant oyster mangroves.

The municipal government has come up with a concept for a free port on a 250-acre man-made island in the southern part of the bay that will be both a tourist attraction and a pollution-free industrial center. So promising is the design considered that it has been chosen by the Shannon Airport and the UN Development Program as a pilot project for foreign investment in Latin America.

In contrast to most free zones, where the yardstick for investment is the capital necessary to create new jobs, the emphasis in Cartagena is on the space needed per job, pollution control, the quality and variety of exports and the industries' interdependence with outlying villages and slums.

Created in 1973, the zone has already attracted five U.S. and European plants and two joint U.S.-Swedish ventures employing 1,600 persons. The first, \$20 million phase of the project will be finished in 1977, when the companies will begin exporting \$7 million per year. When completed in 1987, the zone is expected to house 60 plants with 20,000 workers producing \$150 million annually in exports.

To enter the zone, industries must create one job for every three feet of land, export 80 per cent of their finished product and employ workers from the adjacent villages and slums. The project will produce toys from Dow Chemical, canned tomato sauce from the produce of nearby villages and South America's first semi-conductors.

Working through UNDP, Shannon technicians are helping make the island as much a tourist attraction as Ireland's international airport. The island is divided into five smaller islands on the principle of a Spanish plaza, with depots for raw materials at the center of the industrial modules and offices in the outer circle. Each island will be surrounded with a tropical park, and a marina will be built for a five-minute commute to the city across the bay. All utilities are out of sight at the northern end. At the hub of a one-way highway encircling the island will be a commercial mall housing offices, shops, a hospital, vocational schools and a management training university.

No island will be started until its predecessor is

(Continued on p. 6)



## Industry Access: How It's Done in Japan, Brazil and India

The May 10 issue of *World Environmental Report* carried a roundup of reports on how European countries deal with the question of allowing industry groups to have access to the government decision process when environmental regulations are being formulated. Here are responses from some of *WER's* non-European correspondents:

**Japanese Participation**—Industry access to the government process of drafting environmental laws and regulations in Japan is not only allowed, but it is also encouraged by the fact that top industry management is represented as integral members of highly influential government advisory bodies.

The Central Council for Environmental Pollution Control, an advisory body to the director general of the Environment Agency, has 87 members. Eight of them represent various industrial sectors, including the chairmen of environmental committees of the Petroleum Association of Japan and the Electric Power Industry Association, the vice president of the Federation of Economic Organizations (Keidanren), who is also the chairman of Nissan Motor Company, the vice president of Nippon Steel Corporation, the president of the Japan Atomic Power Corporation, the senior managing director of the Petrochemical Industry Association and the president of the Paper and Pulp Industry Association.

The Central Council for Environmental Pollution Control was established in 1967 as an advisory council to the Environment Agency. Members are selected for two-year terms by the government from state and private environmental research and technical institutes, medical and related research institutes, the governmental Regional Development Public Corporation, governors and mayors, consumers, labor unions and women's organizations, as well as the industrial sectors.

This arrangement was the subject of protests by local governments and the public last year when the Environment Agency announced "scaled down" auto emission curbs for 1976 cars "in the interest of the automakers," compared with guidelines the agency set in 1973.

Japan first became aware of a photochemical smog problem in 1970 and it was related to the sharply rising number of automobiles. The Air Quality Committee, one of 11 under the Central Council, launched a study and made its recommendations in 1972. Accordingly, the Environment Agency announced strong emission standards.

But the manufacturers asked that the nitrogen oxide standard be eased on the grounds that the deadline was "technically difficult." The manufacturers were encouraged by the delay announced by the U.S. Environmental Protection Agency in implementing similar deadlines. The Agency asked the Air Quality Committee to review the 1976 standards, and the committee referred the matter to the Experts' Committee on Automobile Pollution, made up of university scientists and engineers from

the automakers. After its study and review the Expert's Committee recommended to the Central Council that the nitrogen oxide standards be eased and the 1976 deadline postponed for two years. The ensuing uproar has led the Central Council to decide to exclude from its committees representatives of industries having a direct interest in the subject under consideration. This way, it is hoped, the council will truly act in the public interest.

Nitrogen oxide controls remain a major hurdle for the Environment Agency. The Ministry of International Trade and Industry (MITI) has just established within its advisory Industrial Structure Council an antipollution subcommittee to study the "economic and technical aspects" of the 1978 nitrogen oxide standards. MITI's Council has 77 members; its chairman is president of the powerful Keidanren, which represents the top management of Japanese industry, 11 Council members are presidents of iron and steel, petroleum, petro-chemical, electric power, automobile and other major industrial companies or associations.

There is speculation, therefore, that the 1978 standard for nitrogen oxides that were determined by the Environment Agency in 1973 will be considerably eased because of pressure from industrial circles that have been criticizing them as too stringent and technically and economically impractical.

**Brazilian Disinterest**—Several industry people questioned in Brazil showed no interest in the subject of environmental laws and very little knowledge either. Those who did show concern complained of little access to the governmental drafting process. Government environment officials, however, claimed that industry is represented through various environmental bodies and blamed poor legislation on tampering by politicians.

Alfredo Rodrigues do Oliveira, head of the pollution control department of Montreal Engenharia, a large construction company, and also head of his own Hidroquimica, a water and chemical testing laboratory, told *WER* that "participation by private enterprise is relatively small. On the recent water law (*WER*, March 29, p. 3) we received the text and suggested some changes, so maybe we influenced five per cent of the total. We suggested the use of locally made material where available and specific definitions of some of the quantities, which originally were given in terms of 'small amounts'. But even then the text came to us indirectly."

In summary, Rodrigues de Oliveira said, as a rule private companies are not consulted; some laws are drafted by specialists from private companies, but generally only a small part of the whole; when a draft law is sent to industry for comment it is too late to do an adequate analysis. If there were closer and systematic consultation with the private sector, he said, it would result in more-efficient and practical laws.

**India Money Shortage**—Mohammed Miakhan, direc-



tor-general of the Central Board for the Prevention and Control of Water Pollution, told *WER* that the government and various industry groups in India work in "close cooperation" at every stage of both the framing of environmental laws and regulations and in their execution. Representatives of leading industry groups serve in committees set up by the government, he said, because "we need the expertise of the private sector in dealing with our problems."

The Prevention and Control of Water Pollution Act of 1974 was passed by Parliament after three years of deliberation by select committees in which representatives chosen by industry worked at all stages.

The major problem with this Act is the lack of funds to carry it out and the low priority environment is given after food, population and defense programs. West Bengal, for example, which contains India's major problem city, Calcutta, and its most polluted river, the Hooghly, allocated only \$33,000 toward the Act for 1975-76, Miakhan said. The Federal government has decided to declare all rivers as national property and to levy charges on all industries contributing to river pollution.

Chentsal Rao, of the Federation of Indian Chambers of Commerce and Industry, told *WER* that "on the whole, the industry groups and the government have worked in unison in the field of pollution control and attempts have been made to get over some of the irritants."

But Amar Nath, a leading industrialist, told *WER* that "as with bureaucracy everywhere, the Indian officials lay down the criteria without understanding our difficulties—especially the budget of small industries and the non-availability of equipment and data."

A.E. CULLISON, GEORGE HAWRYLYSHYN, R. SATAKOPAN

**A Clarification**—R. Bruce Stedman, acting Deputy Director of the UN Environment Programme (UNEP) has asked us to clarify a remark made by him in an interview reported in the April 26 issue of *World Environment Report*. The opinion expressed in the final sentence of the paragraph on page 4 is not his, Mr. Stedman advises, but should read "some governments believe that if the whole human settlements issue is made an integral part of UNEP it would be a case of the tail wagging the dog."

## Danish/Soviet Environment Protocol

**COPENHAGEN**—The Soviet Union and Denmark have signed a protocol on extensive technical and scientific cooperation in environmental protection. The agreement followed a visit by a Soviet delegation headed by V.G. Sokolovsky, chief of the Soviet Environment Ministry.

The Baltic Sea figured heavily in the discussions, and the visitors toured on the Danish research vessel "Martin

Knudsen," which has been gathering computerized data on the condition of Danish Baltic waters for five years. A provisional report on the effects of manmade pollution in the Baltic and the impact of last winter's inrush of high-oxygen water from the North Sea is to be published next month.

Besides the Baltic, the Soviet-Danish protocol mentioned water quality of river basins, exchange of information on noise pollution and its control, advanced waste collection systems and recycle, harmonization of monitoring techniques and exchange of study tours, seminars and the like.

A joint working group is to be set up within the Danish-Soviet commission on economy and technical and scientific cooperation.

### Free Port (continued from p. 4):

complete and each will be built from the outside park inward so that "the zone will always have a finished look, no matter what phase it is in," according to its director, Hector Trujillo.

"We see the free zone as a balance to the city's economy that will attract tourists who are potential investors," he said. "Our aim is to copy the program at Shannon Airport, where 26 per cent of the tourists invested in its industries."

PENNY LERNOUX

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Mr. Hansler directs all of EPA's activities in New York, New Jersey, Puerto Rico and the Virgin Islands. He has represented EPA as a consultant to the government of the Dominican Republic. Prior to his appointment to EPA in 1970, Mr. Hansler served with the Consumer Protection and Environmental Health Service of the Department of Health, Education, and Welfare.

Space is limited and reservations are open only to *WER* subscribers. Please respond before June 4 by writing or calling Mrs. Jane Lalou, Center for International Environment Information, 345 East 46th Street, New York 10017, (212) 697-3232. There will be an all-inclusive charge of \$35, payable in advance. Reservations may be cancelled up to 48 hours before the luncheon for full refund.



## In Brief...

### Spanish Firm Studies Chilean Open Sewer Problem

A Spanish consultant, INTECSA of Madrid, is undertaking a \$50,000 study of an open-ditch sewage conduit that is still used for irrigation outside Santiago, Chili. Funded by the Spanish government at the request of Santiago's mayor, Mrs. Maria Eugenia Oyarzun, the study is to include plans for two treatment plants to purify the waters before they are used to water vegetable farms serving the Santiago market. Use of the highly polluted waters from the "Zanjon de la Aguada" has been linked by health authorities to endemic intestinal diseases among the 30,000 slum dwellers who live along its five-mile run through Santiago.

The collector carries less than 45 cubic meters per second of water and receives over 40,000 cubic meters per day of waste from 50 large industrial plants, as well as garbage and sewage. The National Health Service estimates that 40 per cent of the wastes discharged into the Zanjon de la Aguada comes from textile plants, 26.4 per cent from food industries and the rest from other sources.

If Santiago accepts the study results and agrees to use Spanish contractors to build the treatment plants, the Spanish government is prepared to finance the whole undertaking, according to diplomatic sources, cost of which is expected to be about \$15 million.

### Solar Energy Feasible Even in Denmark, Report Says

Even in the Danish climate it would be possible to provide heat and hot water for buildings from solar energy, according to a report prepared for the state Technology Council. An investment of \$1.66 billion would save ten per cent of

present energy consumption for these purposes. The report recommended a three-year pilot project aimed at evaluating solar energy for the 700,000 homes now using oil for heat and hot water.

### Common Market Will Share River Pollution Information

The European Economic Community is setting up a program of information sharing on river pollution among its nine member countries. The EEC commission has submitted to the Council of Ministers a proposal to create an information exchange system among the various European monitoring networks that will help assess pollution control measures on a national and EEC-wide basis and also aid consolidation of EEC networks with the international system backed by the UN.

Under the plan, member countries would be responsible for designating central agencies to collect and forward data to the EEC Commission, which would issue an annual report.

### NATO Approves Marine And Desulphurization Projects

NATO's Committee on the Challenges of a Modern Society (CCMS) has approved a program to detect marine pollution and a study of flue gas desulphurization.

The CCMS, at its spring meeting in Brussels, adopted a French plan for development of airborne sensor devices to detect and identify sea pollution from oil spills and other sources. Working jointly, the U.S., France and Greece will employ radar and laser techniques to replace detection by overflying aircraft which is ineffective in bad weather.

The project is expected to facilitate detection of leaks in underwater pipelines, evaluation of airborne marine pollution and advance warning of coastal pollution.

Also approved was a U.S. proposal for a pilot flue gas desulphurization study. The project will look at costs, general impact on participating countries, disposal of by-products and will include a survey of present control strategies. There are now over 40 processes in various stages of testing, some of which produce salable byproducts. The study will focus on the most promising of these. The U.S., Japan and West Germany are the leading developers of such systems; the Soviet Union, whose oil has a high sulphur content, has also begun research and is trading information with the U.S.

### Britain Will Take Two-Year Look at Energy From the Waves

Britain's Department of Energy has announced a \$2 million two-year feasibility study on extracting energy from wave power. The UK has a high availability of wave energy all year and this is seen as the most attractive of renewable energy sources.

Four devices will be studied at 1/100 scale in test tanks. They are the Slater Duck, an oscillating vane; contouring rafts, with hydraulic pumps between each to convert motion into high pressure in a fluid; the air pressure ring buoy, a device that attenuates wave height by providing breakwaters in the shape of an inverted box; the Russell rectifier, consisting of a series of high and low level reservoirs separated from the sea.

The program was drawn up by a Wave Energy Steering Committee of various government research bodies under the chairmanship of Dr. L.E.J. Roberts, director of the British



atomic energy research establishment, Harwell.

A supporting program will examine common problems such as power generation and transmission and will study possible environmental effects of large installations. In principle, a stretch of ocean 600 miles long could provide about half the UK's current electricity demand, and the study will provide information to help decide whether further development is warranted.

### More Noise Control Suggested At Athens Airport

A series of measures to reduce noise at Athens airport has been proposed by a government environmental committee. Located at a seaside resort 10 km from the city, the airport has been identified as the noisiest area of the Greek capital, and local residents have long pressured the government for action.

Measures proposed by the committee, established by the Ministry of Transport, include encouraging the use of less-noisy aircraft by reducing airport fees, banning training flights over the area, banning ground engine tests during siesta hours and stiff

finances for planes violating anti-noise rules.

The government has decided to transfer the airport to another location and has already adopted some noise control measures pending the move. These include flight maneuvers and late hour restrictions.

### Ozone Depletion Fears 'Plausible,' British Conclude

Fears that certain chlorofluorocarbons may deplete the ozone layer are "plausible" admits a report by the Central Unit on Environmental Pollution of the British Department of the Environment, but more information is needed. The report discusses the hypothesis that the gases CFC 11 and 12, widely used as aerosol propellants, refrigerants and foaming agents, could deplete the ozone layer, allowing greater penetration of the sun's ultraviolet radiation to the earth.

Limited studies described in the report suggest that continued use of the gases at the 1973 rate would lead to a maximum ozone depletion of eight per cent in 100 years. This would cause a 16 per cent increase in ultraviolet radiation, no more than

would be experienced by a person moving from the north of England to the south coast. Manufacturers are being asked to minimize use of these gases and seek alternatives pending further research.

### Kuwait Studies Nuclear Power For Water Desalination

Studies are underway in Kuwait on building a nuclear plant to generate electricity and desalinate water. The Chief Engineer for Electricity and Water Supply, Dr. Zaki Abu Eid, said that plant is expected to be operational by 1985. The studies are being carried out by Kuwait's Atomic Energy Commission. Dr. Abu Eid said that while no serious difficulties are expected in building such a plant for peaceful purposes, a number of precautionary measures are being taken beforehand. Students will be sent to England and Pakistan for further studies in the nuclear field, he added.

In another development, the Kuwaiti Ministry of Public Works is sending a four-member team for a month-long tour of the U.S., West Germany and Australia to study ways of reusing sewage water for irrigation purposes.

## Calendar . . .

**June 2-4**—Forum on Ozone Disinfection. Chicago. Sponsored by the International Ozone Institute.

**June 5**—World Environment Day. Sponsored by the United Nations Environment Programme.

**June 12-17**—Environment and Safety 76. Copenhagen. An exhibition and fair sponsored by Danish environmental authorities and national organizations.

**June 17**—Environmental Issues in the Caribbean. New York. A luncheon briefing sponsored by the Center for International Environment Information (*W/ER*, May 10, p. 3).

**June 13-19**—Second Seminar on the Role of Transportation in Urban Planning, Development and Environment. Washington. Sponsored by the Economic Commission for Europe (ECE).

**June 21-25**—Second International Congress and Exhibition of ISWA-ITALIA 76. Padua, Italy. Sponsored by the International Solid Wastes and Public Cleansing Association. Sessions on recycling; landfills; incineration, and pyrolysis; sludge treatment; collection, transportation and street cleaning; hazardous waste, including legal aspects. Contact W. Lacy, EPA, Washington, D.C. 20460.

**June 27-July 1**—World Food Conference of 1976. Sponsored by the World Food Institute of Iowa State University.

**July 12-16**—Working Group on Oceanography and Data Exchange. New York. Intergovernmental Oceanographic Commission.

**July 14-16**—Eighth Bicycle/Pedestrian Seminar, Toronto. Sponsored by Metropolitan Association of Urban Designers and Environmental Planners.

**August 9-17**—Symposium on Atmospheric Ozone. Dresden. Sponsored by International Association for Meteorology and Atmospheric Physics (IAMAP) and the World Meteorological Organization (WMO).

**August 19-28**—Symposium on atmospheric Radiation. Garmisch-Partenkirchen. Sponsored by IAMAP and WMO.

**August 30-September 3**—Symposium on Problems Related to Solar Energy Utilization. Geneva. Sponsored by the UN Educational, Scientific and Cultural Organization (UNESCO) and the WMO.





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## Another Big Oil Spill Off Western Europe Raises Serious Questions

European environmentalists are outraged over the second supertanker oil spill in two months to foul the sea and beaches. Among the issues raised by the large spill off the northwest coast of Spain are the environmental hazards posed by supertankers, the responsibility for cleaning up spills and the use of detergents for cleaning up.

The worst spill since the infamous *Torrey Canyon* disaster in 1967 occurred May 13 when the Spanish supertanker *Urquiola* ran aground in La Coruna harbor. Broken in half by explosions after the accident, the *Urquiola* in the first week lost more than 85,000 tons of its 108,000 ton cargo of oil. The resulting black tide covered 60 miles of Spanish coastline noted for its fine beaches and seafood, and threatened the shores of France, Morocco, Portugal and possibly even such far away spots as the Caribbean.

The incident was even more of a cause celebre than the splitting open in March of an Onassis supertanker, the *Olympic Bravery*, off the coast of Brittany. Although the oil lost from this ship amounted to only 800 tons, the event aroused a furor among environmental groups and the residents of the affected island of Ushant.

Since then *Torrey Canyon* broke apart on reefs in the English Channel spilling 100,000 tons of oil, there have

Since the *Torrey Canyon* broke apart on reefs in the English Channel spilling 100,000 tons of oil, there have been five other supertanker spills with an additional total loss of more than 200,000 tons. The supertankers, which are more economical for transporting oil than smaller vessels, pose a growing menace to the environment, according to critics.

Large oil spills strain the resources of affected nations by the resulting pollution and raise the question of responsibility for cleanup operations. There are now several international agreements and conventions that provide uncertain protection. The Brussels Conventions of November, 1969, and December, 1971, are complex and unevenly applied. There are also two voluntary plans, TOVALOP and CRISTAL, created by tanker owners to cover their liability.

A related issue is the use of detergents to eliminate slicks. Before the biodegradable detergents used are

consumed by bacteria, they constitute a danger for marine life. According to Maurice Le Demez, secretary general of the Society for the Study and Protection of Nature of Brittany, "Detergents diminish the possibilities of oxygen absorption for fish and algae and kill them. Nine years after the *Torrey Canyon* catastrophe, there is still no safe and effective means of combatting black tides."  
DAVID FOUQUET

## Common Market Foundation Studies Living and Working Conditions

**DUBLIN**—The European Economic Community (Common Market) is to investigate living and working conditions throughout its nine member states by means of the new European Foundation for the Improvement of Living and Working conditions that has been established here.

The Foundation, which has a staff of 30 and an annual budget of \$800,000, will undertake studies of how to plan and establish better living and working conditions. It will organize and finance research projects and studies and will sponsor exchange of information among member states.

Dr. Patrick Hillery, EEC Commissioner for Social Affairs told journalists at the opening of the Foundation last month that a fundamental challenge facing everyone is how to improve living and working conditions without either depersonalizing busy towns and cities or destroying their natural surroundings. This problem should be considered in the context of the EEC's goal of economic expansion.

The Foundation is the first EEC institution to be sited in the Irish Republic and it will take an applied approach to problems through pilot projects, conferences, symposia and seminars. Ireland was chosen as the site

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because, while economic growth is a vital part of the country's progress, it has to date been spared what the EEC considers the worst effects of industrialization without regard for living and working environment.

Dr. Hillery told the first meeting of the Foundation's Administrative Board that "The Foundation's work in pursuing ideas affecting the medium and long-term improvement of living and working conditions should prove effective. Not only could this be so, but we should also be able to learn the lesson from its work—that prevention is better than cure."

The Foundation will concern itself not only with a more democratic and participative working environment but also with the physical environment.

Chairman of the Administrative Board is Michael Carpentier and the Foundation's first director, with a net salary of \$30,000 for a three-year contract, is a former Phillips Company executive from Eindhoven, Mr. De Jong. His deputy is to be an Italian trade unionist, Guiseppe Querenghi.

Carpentier said the Foundation's expenditures will concentrate on research and the initial stages of projects on working conditions, rather than on operating costs. It will stress the human element of such issues as shift work in factories, difficulties in finding work for school drop-outs, the problems of redundant and retired workers. It will consider physical environment in living and working conditions, better housing, pollution, recreation and urban renewal.

He stressed that the Foundation will be a "think tank" with an active role, not just a body for producing reports. The results of its research will form the basis of proposals for EEC directives and regulations by the Council of Ministers that would, after acceptance, be enforced throughout the Common Market countries.

TOM Mac SWEENEY

Suarez said in a press conference that "Our government is respectful of international obligations and knows the lamentable consequences of the unilateral use of international waters."

Indeed it does. In 1962, Bolivia cut off relations with Chile when the Chileans diverted the Lauca River to irrigate a huge desert project. Bolivia considered the unilateral Chilean action such an affront it withdrew temporarily from the OAS in protest. Diplomatic relations were restored only last year.

In 1969, after years of dispute, Argentina, Bolivia, Brazil, Paraguay and Uruguay signed the Treaty of the Plate River Basin, providing for "joint action in . . . exploitation of the great natural resources of the region" and "rational utilization of water courses and their multiple and equitable exploitation." In 1971, the treaty was amended to include a provision that one nation would do nothing to cause "appreciable damage" to another on successive river courses.

Nevertheless, the nations of the Plate basin have become expert in disregarding the treaty. Without consulting Argentina, Brazil and Paraguay have already begun work on the grandiose \$5 billion Itaipu Hydroelectric Project on the Parana just 17 km from the Argentine border. Argentina contends Itaipu will impair its plans for the joint Corpus project with Paraguay further down the Parana, cause serious ecological problems in Argentine territory and adversely affect Argentine port operations, as the Parana flows down into the Plate.

The week after Bolivia announced its Pilcomaya project, Argentine Roberto Guyer, subsecretary for Special Political Affairs of the UN, visited Brazil's Foreign Minister. Argentine papers reported he was there to resolve the controversy between Brazil and Argentina over the Itaipu project. Brazil is presumably

(Continued on p. 5)

## Row Over South American Water Rights Is Sparked Anew by Bolivia

**BUENOS AIRES**—A recent Bolivian announcement of imminent plans to divert the Pilcomayo River has touched off once again the ongoing South American water rights controversy. The Pilcomayo, which originates in Bolivia, flows down through Paraguay and on into Argentina's Parana and Plate Rivers. Bolivian officials said they have a \$10 million loan from Venezuela to use the Pilcomayo for a 60,000-hectare irrigation project in the southeast Chaco region.

A few days after the Bolivian announcement, Paraguayan Foreign Minister Alberto Nogues flew over the river basin to assess likely ecological and other effects such a project might have on Paraguay. Further down river, the Bolivian plans raised a furor in Argentina, which has been at loggerheads with Paraguay and Brazil for years on the question of international water rights.

Bolivian Planning Minister General Juan Lechin

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## Latin America: UNEP's Regional Office Faces Host of Issues

MEXICO CITY—Dr. Vicente Sanchez glanced out the window of his tenth-floor office. On the horizon, the dim outline of mountains was visible through the smog. "Those mountains are about 10 kilometers away," he said. "You should see them clearly."

The smog that obscures the mountains around this Mexican capital is just one of Dr. Sanchez' problems—and part of his work. So are oil spills in the Caribbean, copper mines in Panama and urban slums in Peru. In just six months, the new Latin American regional office of the United Nations Environment Programme (UNEP) which Dr. Sanchez heads, has been deluged with requests for information, advice and technical assistance from the Latin American and Caribbean countries within its jurisdiction. The office already has several projects underway or nearing completion.

Before the office was opened last September, UNEP maintained a liaison between its Nairobi headquarters and local governments. "But Nairobi is so far from Latin America and communications are so bad it seemed practical to open a regional headquarters here," Dr. Sanchez told *World Environment Report* in an interview.

The office operates with "a very small team." Deputy director is Anastase Diamantidis, and there is an ecologist, an engineer with a PhD. in environmental sciences and an economist. Special consultants are used as needed on specific projects.

The goals of the office are four-fold, Sanchez said—to identify environmental problems in the area, to rank them in urgency and importance, to encourage attention

to them and an awareness of environmental conditions and to coordinate, support or aid specific projects.

"In the last year, a real awareness of environmental problems has developed in the area. I'd say 95 per cent of the governments at this point are very aware of their problems. We see this in the number of requests we get." Dr. Sanchez said. "While most of the countries now have some kind of institutional machinery to deal with their environmental problems, they call on us for help or information."

Advice on the simplification of that institutional machinery is a priority project for the UNEP office. Dr. Sanchez noted that, in one country, the chief environmental protection officer may hold cabinet rank while in another it may be a subsecretary, or three or four secretariats may be equally involved, or the top environment official may report directly to the president.

Avoiding duplication of projects is another goal of the office. Dr. Sanchez said several world organizations may each be working on the same problem in the same country without knowing of the other's involvement. In another sense of nonduplication, Dr. Sanchez and his staff hope to work out general projects that will apply to several countries with the same problems. For example bauxite mining in Jamaica and copper mining in Panama both involve the impact of mining operations on the tropical eco-system.

"We can also initiate projects," Dr. Sanchez pointed out. In Peru, an important regional industrial development plan—Bayovar—is receiving assistance in its

### What They Need . . .

The wide range of problems facing UNEP's Latin American regional office was illustrated at a meeting held in Caracas prior to the fourth UNEP Governing Council meeting in Nairobi. Representatives of 19 nations in the region met under the auspices of the regional office.

One need that became obvious at the meeting was for a listing of definitions of environmental terms. Dr. Sanchez suggested such a glossary be compiled in three languages—English, Spanish and French—for use throughout the Americas.

Among the other needs voiced by the delegates were the preparation of a general methodology for evaluating the environmental impact of large-scale developments and a means to anticipate environmental problems in areas where human settlement "may give rise to significant ecological changes."

Programs for training technical and professional personnel, promotion of local citizen participation in solving environmental problems and a regional system for interchange of information, experience and technical personnel were also among the priorities. His office is already involved in these activities, Dr. Sanchez said, by running training programs, by "raising the awareness" of countries of their environmental problems and by

acting as an unofficial clearing house for information and technical contacts.

The delegates asked UNEP to help them prepare a series of studies to develop means for preventing or mitigating natural disasters such as earthquakes, hurricanes and forest fires, and means for cooperative action to handle their immediate effects. They also urged a study to avoid another kind of disaster—the damages that tourism may cause to the environment.

Alternate or non-conventional energy sources, such as geothermal and solar energy plants, have already been successfully exploited in countries like Mexico, and the delegates asked for research and development on the various technologies for producing or conserving energy, with special attention to the rural areas of Latin America. They also asked for the formulation of pollution control standards within the region and for assistance to governments in managing natural resources to benefit the population.

Problems peculiar to specific parts of the region were considered in a second list of "sub-regional" priorities. These included development of improved agricultural production in the tropics, control of the environment of the Caribbean, soil conservation in arid and semi-arid zones, rational management of the Andean eco-systems and the development of models of human settlement, especially for the tropics.



planning stage from UNEP and will also get follow-up advice on an environmental program. This is an example of the specific regional projects UNEP can undertake, not limiting itself to national projects.

Jamaica, Cuba and Trinidad are "extremely active" environmentally, he said, while Paraguay, and Ecuador remain the least active in the region so far. Letters to the foreign ministers of all nations in the region advising them of the office's existence have been followed by personal visits by staff members to determine specific problems. In mid-April, a UNEP regional team visited all of the central American governments, national universities and scientific institutions.

Latin America's most severe and urgent environmental problem is human settlement, Dr. Sanchez believes. While not entirely environmental, the environmental component "is so important. The cities grow irrationally and use land that should be used for agriculture. City environments are getting worse — air pollution, lack of water, psychologically and socially. It's getting worse faster in Latin America than, I believe, anyplace else."

One current project of the office is an action plan for the protection of the Caribbean, with all island and coastal nations participating. The two-year project will determine natural, marine and human resources, ac-

complishments on environmental programs thus far, and what must be done to protect the land, sea and air. Dr. Sanchez would like to see a Caribbean Convention similar to the Mediterranean Convention recently signed (*WER*, March 1, p. 1).

A native of Chile, Dr. Sanchez was director of economic and social programs for UNEP in Nairobi three years before being assigned to open and head the new regional office. A graduate of the University of Chile Medical School, with a PH.D. in Social Sciences from Harvard, he believes his twin degrees are a double asset to his current work, while his native Spanish is invaluable.

KATHERINE HATCH

**A Correction:**—A story on page 4 of the May 24 issue of *World Environment Report* erroneously implied that a number of environmental groups were engaged in a program to persuade Congress to increase the U.S. contribution to the UN Environment Fund. Representatives of the National Wildlife Federation, the Natural Resources Defense Council and the National Parks and Conservation Association merely attended an informational meeting on the subject organized by the Sierra Club. *WER* regrets this error.

## WHO Reports Some Progress in World Water Supply Systems

**GENEVA**—The three-week annual World Health Assembly—the governing body of the World Health Organization (WHO) — here last month was presented with an extensive report on progress by developing countries in community water supply and waste water disposal from 1970 to 1975.

The WHO report found that advances over the five-year period more than kept pace with population growth in both urban and rural areas, if the subject is viewed globally. But it added that progress is much clearer in water supply than in sewage disposal, where the situation is much less satisfactory.

The survey covered nearly 90 per cent of the population of developing countries, excluding China.

The percentage of urban dwellers served by house connections to piped public water supplies rose from 50 in 1970 to 57 in 1975, according to WHO. The percentage of the rural population having access to "safe" water rose from 14 to 20. The report breaks down the regional situation as follows:

Region	Per Cent of Population With Adequate			
	Water Supply		Excreta Disposal	
	1970	1975	1970	1975
Africa				
Urban	33	36	8	13
Rural	13	21	23	21
Americas				
Urban	61	67	36	30
Rural	24	30	22	22
Eastern				
Mediterranean				
Urban	56	52	—	—
Rural	19	16	12	14
Europe*				
Urban	47	67	31	20
Rural	45	63	5	18
Southeast Asia				
Urban	35	47	—	—**
Rural	9	19	—	—**
Western Pacific				
Urban	65	75	27	24
Rural	23	30	11	43

\*Algeria, Malta, Morocco and Turkey

\*\*Marginal progress



## Iceland: Struggling To Develop Marine Protection Program

**REYKJAVIK, Iceland**—Protection of the marine environment is now a subject of major attention in Iceland, a country completely surrounded by the sea whose population depends largely on fish and fish products. Over 75 per cent of the island's exports are sea products.

Last winter's fishing season was extremely poor, with a catch about 20 per cent less than the previous year. Although this fits into the pattern predicted by ichthyologists—declining stocks of fish related to over-exploitation—it comes as a shock to the Icelandic people. Since the great collapse of the herring fisheries, these fish have been at a minimum and are now protected around Iceland. Little improvement is apparent. Other fish varieties are also over-exploited and in decline.

Systematic investigations of the cod—basic fish of Icelandic waters—carried out for more than 40 years give an excellent view of changes in the fisheries and fish stocks. The total annual mortality has been increasing steadily due to increased fishing; it was 70 per cent in 1970-74. The spawning potential has been greatly reduced. The cod had the chance to spawn an average of 1.3 times in the 1970-74 period, compared with 2.5 times in 1945-49. It was not unusual 10 to 15 years ago to find cod 17 or 18 years old, but it is rare today to find one older than 12 years. This means that the cod caught are becoming younger and smaller; the intense rate of fishing does not allow them to grow to the optimum capture size.

Not only has the mature cod been over-exploited, but fishing is also increasing on the nursery grounds. Heavy fishing during the juvenile phase affects the stock in two ways: first, the fish caught are immature, and because fewer fish reach maturity the spawning stock is reduced. In recent years there has been ever-increasing catch of small immature cod in the Icelandic stock and a drastic reduction in spawning population. The country's Marine Research Institute expects this to continue, with a 1979 spawning stock of only 1/7 the 1970 level if the same fishing effort continues. The Institute believes existing conservation measures must be greatly increased by closing major nursery and spawning grounds and by increasing mesh size to stop the fishing of small cod. Also, the allowable 1976 catch has been established at 230,000 tons, compared with the 1974 catch of 375,000 tons. British scientists set an allowable catch of 265,000 tons.

Icelandic experts believe that the country's fleet of more than 60 trawlers and 3,000 other vessels is more than capable of fully exploiting the fishstocks under scientific management.

It is this situation that has led to Iceland's dispute with Britain over fishing rights. Iceland unilaterally extended its fishing limits to 200 miles last October and is pushing at the UN Law of the Sea Conference for coastal state rights to determine allowable catch on the continental shelf and spawning grounds.

Iceland has made two-year agreements on limited fishing with West Germany, Belgium, Norway and the

Faeroe Islands. But no agreement has been reached with Britain, whose vessels now continue to fish under navy protection.

Iceland is preparing a fish management program whose purpose, according to Foreign Minister Einar Agustsson, "is to ensure the optimum sustainable yield under scientific management. It will constitute a thorough revision of previous management programs which so far have always been hampered by the interference of foreign fishing. The management program will be based on scientific conservation principles."

ELIN PALMDOTTIR

## China Establishes Preserves for Endangered Species

China has achieved considerable success in wildlife conservation: more than 1,100 varieties of birds and 400 of animals have been catalogued; many rare animals—giant pandas, golden-haired monkey, addax, white-lipped deer and wild elephant are increasing.

Before the Communist takeover, many forest's had been destroyed and natural environments altered. As a result, many species of plants and animals became extinct or neared extinction. Now, natural preserves have been marked out in Kirin, Heilunkiang, Szechwan, Yunnan, Kweichow, Kansu, Kwangtung, Shensi, Fukien and Chekiang. The Wanglang preserve in Pingwu county in Szechwan and the Changpai Mountain preserve in southeast Kirin are outstanding examples. The former is the home of the giant panda and the latter is a forest area containing a great variety of trees and wildlife.

A strict hunting policy is enforced by the government. Capture and shooting of rare animals and endangered species are prohibited. Moreover, no animals may be hunted by instruments or methods that jeopardize the sources or endanger other animals or people. Domestication of wild animals that can successfully be raised in captivity is encouraged. Expansion of forestation has also been done to conserve the habitat of valuable wildlife. The study of domestication, introduction and propagation of rare animals and plants are carried out by organized research and educational institutions, zoos and natural preserve administrations.

### Water Rights (Continued from p. 2):

anxious for a settlement with Argentina because the Bolivian plans for the Pilcomayo could affect the flow of water into the Parana, requiring a change in Itaipu plans.

The Argentine press has revelled openly over Brazil's predicament. Said one paper "If La Paz (Bolivia) proposes to exploit the Pilcomayo unilaterally, Asuncion (Paraguay) will have to take official action. This will bring pressure on Brazil to resolve its differences with Argentina, since Paraguay is joint owner of both the Itaipu and Corpus projects."

JANE BERGER



## In Brief...

### Irish Government Turns Down Dublin Bay Refinery Plan

The government of the Irish Republic has refused planning permission for a new oil refinery on Dublin Bay, which has long been opposed by environmental groups. The proposal was originally turned down by the Dublin Corporation, the local planning authority, but its backers appealed to the Minister for Local Government, James Tully, who held a 16-day hearing.

The \$120 million refinery proposal was put forward by a company called Aquarius Securities, whose identity was never fully disclosed. It later developed that the French state-owned petroleum firm, Elf, was involved, along with several prominent Irish businessmen.

In rejecting the refinery for Dublin, Tully cited unacceptable risk to the environment, visual intrusion on the bay views and the amenity of its beaches, an inadequate water supply for the project and inadequate fire protection.

### Solar Energy Seen as Important Source for Great Britain

Solar energy could provide 10 to 20 per cent of Britain's energy needs by 2020 and therefore merits that proportion of the country's energy research and development budget, according to Professor John Page, chairman of the U.K. section of the International Solar Energy Society. Page launched the society's report, "Solar Energy—a U.K. Assessment," at the Royal Institution in London last month. The report discusses economic, social and political aspects of a solar energy program, as well as the technology, and lists U.K. firms in the field.

About 50 per cent of the energy used in Britain is for heating buildings and providing low-grade industrial heat. "We believe a significant proportion of that heat could eventually be provided by solar energy," said Professor Page.

The report argues that to play a useful role in the 21st century, solar energy needs an investment in research now.

### Maurice Strong First Winner Of Iran's Environment Prize

Maurice F. Strong of Canada, first Executive Director of the United Nations Environment Programme (UNEP) is the first recipient of the International Pahlavi Environment Prize. The prize, which includes an award of \$50,000 donated by the government of Iran through the United Nations, is to be given annually for the most outstanding contribution in the field of environment. It was scheduled to be presented to Mr. Strong by UN Secretary General Kurt Waldheim on June 4, eve of World Environment Day.

The award was made on the unanimous recommendation of an Advisory Selection Committee, chaired by Misael Pastrana-Borrero, former President of Colombia, which met in Nairobi during March.

A Canadian industrialist who is now President and Chairman of Petro-Canada, Strong was Secretary General of the 1972 UN Conference on Human Environment held in Stockholm. He resigned from UNEP at the end of 1975.

Mr. Strong has also been a member of the Advisory Committee of the Center for International Environmental Information, publisher of *WER*, since its inception.

### Libya Buys Solid Waste Plants From U.S. Affiliate

The French subsidiary of the U.S. multinational firm, Peabody Galion, has won a \$50 million contract to supply Libya with two solid waste disposal plants. The contract, won by Peabody GCI, makes up for 15 per cent of France's total exports to Libya last year and is the largest of its kind ever signed.

The French firm, which competed with Italian and West German firms,

will construct the two plants over the next 30 months, one near Tripoli and the other near Benghazi. The Tripoli plant will have a capacity of 500 tons of household, hospital and slaughterhouse wastes daily; the Benghazi one, 400. Both will be designed for eventual tripled capacity. The contract includes training of local personnel and technical assistance for a year after startup.

### Australians Debate Uranium Export Policies

A strong groundswell of environmental concern is building in Australia over the nation's uranium policies. With proven reserves just under half a million tons in the form of  $U_3O_8$  and long-term contract prices hovering about \$40 per lb., the stakes are high. Lobbying has been intense from corporate and environmental interests alike.

Main focus of the debate is the Ranger inquiry being conducted by Mr. Justice Fox, which is looking into the environmental aspects of mining, processing and marketing Northern Territory uranium. Its scope has now been widened to look at other issues and a report is expected soon; no mining decisions have been taken meanwhile.

Now attention is also drawn to Japanese proposals to develop jointly with Australia a "nuclear package," which were discussed last month by a visiting Japanese mission. The cycle would involve uranium mining, processing, enrichment, reprocessing of spent fuel and storage of fissionable wastes. Key to the discussions is storage of long-lived wastes, and Australia is being depicted as the potential dumping ground for Japanese wastes. This assertion is vigorously denied.

The debate is taking place at a time when the ousted Labor party is looking for political issues, and uranium ranks high among the possibilities. Also, the academic community has been strongly against the Japanese-Australian package, and members of physics departments in all West Australian tertiary



educational institutions have joined forces to fight the proposal.

### Austria Will Check Health Of Nuclear Plant Neighbors

Every inhabitant around Austria's first nuclear power plant, near the village of Zwentendorf in lower Austria, is to have a series of health checks over a period of ten or 20 years. The purpose is to establish whether proximity to a nuclear plant has any adverse effect on a population.

The plant is to start up next year; operation has been delayed 12 months because government inspectors insisted on several structural alterations, some designed to safeguard local residents from radiation. Erection of the plant and plans to build two more further up the Danube have aroused considerable protest mainly on health grounds or fears that the natural beauty of the valley will be spoiled.

The recent earthquakes in northeast Italy have started new protests because Zwentendorf is believed to be on the same fault line.

### Austrian Bill Would Boost Government Environment Power

The Austrian Parliament will have before it this fall an amendment to the constitution and a bill giving the federal government enhanced powers in environmental protection. Most of the authority in this matter now lies with the state governments, who vary in their interest in environmental affairs, especially if local industries are affected.

Parliament will also be asked to approve a program and funds to provide compulsory training of district health officers in complete, up-to-date systems of public health. So far, these officers have had to pay for their own training or to go abroad for it if they could obtain a grant.

### Bavaria Forms Volunteer Environment Guards

Bavarian State Minister for the Environment Max Streibl announced last month in Munich that the state has begun an all-volunteer auxiliary guard system to help police environmental laws and regulations. Thirty-five volunteers are attending the first course, using their own vacation time to do so. Streibl pointed out that environmental protection laws cannot be enforced by the regular police force alone. The Bavarian law on environment specifically provides for the volunteer force.

The volunteer guards will have the right to stop people suspected of violating laws (for example, littering or picking protected flowers) and take their names and addresses. If suspected violators will not identify themselves, the volunteers have the right to escort them to the nearest police station. The volunteers can bar persons from entering certain protected areas; they can confiscate items taken illegally; if there is danger of escape they have the power of arrest.

The volunteers carry identification cards and armbands identifying them as "Naturschutzwacht Bayern," Bavarian Nature Protection Guards. They will carry out routine checks and patrols and will control key areas during holidays and weekends. Their functions are threefold—orientation and education of the public; informing the public of regulations; prevention of violations.

### W. German Chemical Industry Spends \$280 MM on Environment

In 1974, the West German chemical industry invested more than \$280 million in environmental protection. Of this, \$23 million went for waste removal, \$186 million for water purification, \$69 million for air pollution control and \$4 million for noise control.

These figures were released at the annual West German Chemical Industry Association's Environment Forum, held last month in Munich.

Max Streibl, Bavarian State Minister for the Environment, told the meeting that ecological progress is directly related to what is economically possible. He suggested that, where smaller firms cannot satisfy the "polluter must pay" principle, state assistance might have to make up the difference. He also stressed the need for international cooperation to equalize financial burdens on firms competing in the world marketplace.

Prof. Rolf Sammet, of the Association, told the forum that there is now greater recognition that economic feasibility is a major factor in environmental improvement than there was in 1971 when the first forum was held in Bonn and environmental discussions tended to be emotional.

### White Rhino Makes Comeback In Malaysian Jungle

The two-horned white rhinoceros of Southeast Asia, believed to be on the edge of extinction, is now thriving in the jungles of northern Malaysia, according to Harold Stephens, an American free-lance reporter who together with some Malaysians found rhino wallows in a northern national park. The exact location was not revealed because the discoverers fear that poachers would find the rhinos and wipe them out for their horns, which are highly prized in oriental medicines.

The evidence found included recently stripped tires, which are the exclusive and unique diet of the big animals. The region is devoid of civilization of any kind, and even the remote Negrito tribesmen do not inhabit the areas where the rhinos are believed hiding.

### Hong Kong Plans Environment Protection Unit

The government of Hong Kong is planning to establish an Environmental Protection Unit by the end of the current fiscal year (March 31, 1977). The unit will consist of a director and four environmental of-



ficers responsible for air pollution, water pollution, noise pollution and solid waste disposal. Its work will include: 1) establishing a program for environmental protection and improvement of objectives and priorities; 2) establishing standards for environmental quality; 3) ensuring that the necessary data is collected; 4) cooperating with the government departments on the monitoring of pollution and the enforcement of legislation.

### Indonesia Prepares Bill on Marine Pollution

The Indonesian government is preparing a bill on marine pollution to present to Parliament in the near future. So far, Indonesia has had no

regulations on sea pollution, but last year's oil spill from the grounded Japanese tanker, *Showa Maru*, caused great concern. Indonesia has lodged a so far unresolved claim for damages arising out of the incident. The proposed marine regulation will also constitute an effective means to improve the standard of living of Indonesian fishermen.

### International Center Adds New Advisory Committee Members

The Center for International Environment Information has added three new members to its Advisory Committee. They are veteran news commentator John Chancellor, chief reporter and writer for "NBC Nightly News," Miles O. Colwell, M.D., vice

president — Health and Environment, Aluminum Company of America and William C. Krumrei, senior director of the Procter and Gamble Company's Research and Development Department.

The Center, which publishes *World Environment Report*, was established by the United Nations Association of the USA early in 1974 with the support of the UN Environment Programme (UNEP).

The Advisory Committee, which advises the Center on policy questions, is made up of representatives of the mass media, industry, government and conservation organizations in the U.S. and Canada. Its chairman is Arthur Reef, vice president of AMAX Inc.

## New Publications

Following is a list of books and other publications received by *WER* in recent weeks that relate to international environment issues. For further information, contact the individual publishers.

**Early Action on the Global Environmental Monitoring System.** International Environmental Programs Committee of the National Research Council, Washington, D.C. Based on a symposium organized by IEPC in October, 1975 to discuss the UN's GEMS program. A number of recommendations to UNEP in the general area of what monitoring is desirable and practicable at the global level and how existing scientific resources can be enlisted for GEMS.

**Ecotechnics.** Fairchild Books, New York. \$50. 320 pages. A directory listing more than 15,000 European resources in the environmental protection field. Listings under 820 product classifications for water, air, solid wastes and noise. Also lists 5,000 consulting engineering firms, research offices and service centers related to environment. Published in Switzerland in four languages — English, French, German and Japanese.

**The Genesis Strategy. Climate and Global Survival.** Stephen H. Schneider. Plenum, New York. \$14.95. 419 pages. A climatologist with the National Center for Atmospheric Research, Schneider examines the relationships among food, technology, population, energy, pollution and politics. He concludes that recent bumper food crops resulted from not only technological advance, but also unusually good weather, and that it is unrealistic to expect technology to keep pace with population and environmental effects. He proposes a "Genesis Strategy" which involves changes in government structures to ensure "prudence,

compromise, negotiation and margins of safety in all our future planning..."

**Methods for the Determination of Hydrocarbons in the Atmosphere (Report 3/76).** Available free from Stichting CONCAWE, the western European oil industry study group at 60, Van Hogenhoucklaan, The Hague 2018, Netherlands.

**Nuclear Power.** Walter C. Patterson. Penguin Books, Baltimore. \$3.50. 304 pages. A Pelican Original (soft cover). A Canadian nuclear physics graduate, Patterson now lives in London, where he is on the staff of Friends of the Earth. An examination of the nuclear power controversy for "the concerned citizen." Patterson discusses the safety of nuclear plant operation, the waste disposal issue, the possible misuse of nuclear materials, and the necessity of the nuclear option. He concludes that there are still serious economic, safety, political and environmental questions to be answered. "The options are still open. Within the present generation they will almost certainly be foreclosed," if we continue the current rate of nuclear commitment.

**Nuclear Power: The Fifth Horesman.** Denis Hayes. World watch Institute, Washington, D.C. \$2 or through subscription. 68 pages. This is Worldwatch Paper 6. Hayes also addresses the nuclear controversy and warns about irreversible commitment to this technology. But he concludes that the "world is already beginning to rethink the consequences of a future based on nuclear energy," citing the

growth of nuclear opposition around the world and the recent cancellations and deferrals of new reactors.

**Symbiotic Nitrogen Fixation in Plants.** (International Biological Programme 7). Edited by P.S. Nutman. Cambridge University Press, New York and London. \$55. 584 pages. Latest in the IBP series, this book discusses current knowledge on the fixation of nitrogen by plants, especially legumes and micro-knowledge on the fixation of nitrogen by plants, especially legumes and micro-organisms. It complements IBP Volume 6, Nitrogen Fixation by Free-Living Micro-Organisms.

**UN Environment Programme — International Referral System.** Three booklets prepared by the U.S. Environmental Protection Agency, which is the U.S. Focal Point for UNEP's IRS. The first booklet is "General Information," the second is "Policy" and the third "Opening of the UNEP/IRS National Focal Point." Contact EPA, Washington, D.C. 20460.

**Water, Its Effects on Life Quality.** Edited by David X Manners. Water Quality Research Council, Lombard, Ill. \$10. 192 pages. Proceedings of the 7th International Water Quality Symposium held in Washington in April, 1974. Subjects include the relationship of water quality to heart disease, cancer and schizophrenia, the effectiveness of water purification and water's role in the energy crisis.

**World Directory of Environmental Organizations.** Second Edition. Edited by T.C. Trzyna and E.V. Coan. Sierra Club. \$18. 288 pages. Lists more than 3,200 organizations—governmental and non-governmental, national and international—in nearly 200 countries, and includes a User's Guide for three dozen specific problems or areas of interest.





# World Environment Report

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## Habitat Ends in Frustration and Embitters Many Western Delegates

**VANCOUVER**—Habitat, UN Conference on Human Settlements, ended here June 11 in a mood of frustration and bitterness. Largest ever held by the UN, and best planned and organized, the conference opened May 31 in a hopeful and enthusiastic atmosphere, with Prime Minister Trudeau speaking of human love and Secretary-General Waldheim spelling out the enormous task of improving living standards for the two-thirds of humanity now living in wholly inadequate housing.

Ten days later, the conference had become engulfed in political issues initiated by a small group of delegates from Arab states, who led the Group of 77 (developing countries) and nearly wrecked the conference, in the opinion of many Western delegates.

Something may be salvaged—the audio-visual experiment was a brilliant success. Few of the films or five-minute “capsules” were individually outstanding, but the collective impact was remarkable. And the Habitat Forum, held in three converted hangars, was given a remarkable venue through the hard work and imagination of a group of Canadians and is to be preserved. The conference recommendations for national action, if ever implemented, are sensible and useful. But this appears to be a small return for the investment in time, energy, imagination and money.

From the moment the Group of 77 produced its entirely new Declaration of Principles, the conference polarized. After three days of acrimonious and fruitless negotiation, the Declaration went through by a vote of 89 for, 15 against, with 10 abstentions. The heated debate centered on the implicit reference to General Assembly resolution 3379, which linked Zionism to racism.

The mood of Western delegates was such that their involvement in next year's water and desertification conferences is now seriously in doubt. And the precise location and funding for continuing UN human settlements machinery were left in the air.

This may have been the last of the great world conferences, of which Stockholm was the first. According to some observers here, it achieved little, cost millions, deeply distressed a host country that has been a firm and generous supporter of the UN and the cause of poorer nations, and embittered the hundreds of non-political experts who came from all over the world to talk of serious matters of deep concern to their peoples.

SPECIAL DISPATCH TO WER

(A more detailed report will appear in the next issue.)

## Iran Embarks On Ambitious Program For Alternate Energy Sources

**TEHERAN**—Of all the Middle East oil producing countries, Iran has embarked on the most ambitious program to develop alternate energy sources. Most of its planning is geared for full realization 20 years hence, or about the time its oil reserves are expected to be depleted.

Currently Iran has a total of 5,000 MW installed electricity power, half of which is fed into the national grid. By 1992 the government plans to expand this capacity to 70,000 MW.

Of this total, it is expected that nuclear power will account for 23,000 MW. Hydroelectric power is to provide 10,000 MW, to be used mostly for irrigation projects. The balance will be met by additional thermal power stations, which will use the large amounts of waste produced by oil refineries, and gas, of which Iran also has vast resources. The latter is earmarked for use primarily in remote areas of the country.

To date, Iran has looked to three sources of assistance in developing its nuclear capability: Federal Republic of Germany, France, and the United States.

The West Germans have already signed a contract and have begun construction of two stations, each with a 1,200 MW capacity. Letters of intention have been signed with France for two stations with 900 MW capacity each. From the United States, Iran has looked for cooperation to build stations for a total of 8,000 MW, but because of unacceptable conditions imposed by the U.S. government on the export of nuclear technology, no contracts have yet materialized.

Iran's agreement with France covers a broad range of peaceful uses for atomic energy, which include providing Iran with access to enrichment facilities. Thus far, the country has secured 10 per cent participation of an unnamed European enrichment plant, and has taken a 25

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per cent share of the French Coredif plant, also for uranium enrichment.

Also with the help of France, a nuclear research and technology center will be built near Isfahan which will eventually be responsible for training Iran's own nuclear scientists and technicians.

Meanwhile Iran has 250 pupils studying at nuclear centers in the United States and Great Britain, with plans to send others to Austria, West Germany, and France.

As a signator of the nuclear non-proliferation treaty, Iran accepts international inspection and controls. It has also proposed a nuclear-free zone for the Middle East.

If the 1992 goal of 23,000 MW in nuclear power is met, it will place Iran among the top ranks of powers using nuclear energy.

## Environmental Groups Try To Block Export of Nuclear Reactors

**WASHINGTON**—A group of environmental organizations has mounted a legal challenge to block General Electric Company's planned export of two large nuclear reactors and 1.4 million pounds of uranium fuel to South Africa. The Natural Resources Defense Council, the Union of Concerned Scientists and the Sierra Club filed their petition with the Nuclear Regulatory Commission on May 28.

The same group petitioned in March to block export of 40,000 pounds of uranium to the Tarapur Atomic Power station in India near Bombay (*WER*, March 29, p. 7). In other international activities, the Sierra Club, with others, earlier this year brought suit under the National Environmental Policy Act (NEPA) to block completion of the Pan American Highway through the rain forest of Colombia's Darien Gap.

In the present suit, the petitioners charge that "General Electric is trying to rush the Nuclear Regulatory Commission and the U.S. Government into a risky, decade-long commitment to nuclear energy in South Africa." G.E. has applied for the license needed to begin shipping this summer \$200 million worth of equipment to the proposed Koeberg Atomic Power Station near Capetown and has applied for a license to export a five-year supply of fuel for the twin 965-MW reactors, which are not scheduled to start up before 1982.

South Africa is not a signatory to the Nuclear Non-Proliferation Treaty and, the petitioners point out, an official of the South African Atomic Energy Board proclaimed in 1974 that his country possesses the technical capability to make atomic bombs and that its nuclear program is more advanced than that of India, which exploded its first nuclear device earlier that year. The Koeberg reactors would produce some 1,000 pounds of plutonium each year, beginning in 1984, enough for

100 Nagasaki-sized bombs, the petitioners contend.

The petition says the NRC must fully consider the environmental, health and safety impact of the Koeberg reactors before deciding on G.E.'s applications, and also seeks an environmental impact statement under NEPA.

## North Ireland Suffers Worst Water Shortage In A Century

**BELFAST**—A \$50 million project is being undertaken in the North of Ireland to ensure water supplies for this city which is suffering because of a prolonged period of dry weather. Last year was the driest in 100 years, with two official drought periods in May and June and no rain at all in the Mourne Mountains during December, normally the wettest month. Since then, the dry spell has continued.

Belfast has a high water wastage rate, 30 per cent higher than the British average, partly because of deteriorated water pipes beneath the ground. Finding and repairing these leaks is a hazardous occupation in this strife-torn city. Engineers working at night, when water consumption is at a minimum, have actually been fired upon when their leak detection equipment has been mistaken for rifles.

Aggravating the situation is a steadily increasing demand for water, not only by individual householders, but also by expanding synthetic textile plants.

Reservoirs elsewhere in Northern Ireland still hold ample supplies, but the main reservoir serving Belfast is at 56 per cent of normal, even before the summer.

The Northern Ireland Department of the Environment is planning to join the reservoirs of the region's six

(continued on p. 4)

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## West Asia: UNEP's Regional Office Copes With Arid Ecology

**NEW YORK**—It will come as no surprise that the top priority for the UN Environment Programme's West Asia Regional Office is the ecology of arid and semi-arid lands. A close second is the development of water resources and its impact on the environment.

But underscoring these issues, according to Aziz Saleh Al-Hamdan, UNEP's regional director, is the tremendous rush of industrialization and urbanization related to the area's energy resources.

UNEP's West Asia office covers 12 countries—Lebanon, Syria, Jordan, Iraq, Kuwait, Bahrain, Saudi Arabia, the United Arab Emirates, Qatar, Oman, the Yemen Arab Republic and the Yemen Democratic Republic. Until early last year, UNEP had served the region only through a representative in the UN Economic Commission for West Asia office in Beirut, but then decided to establish its own office, also, unfortunately, in Beirut.

**Trouble in Lebanon** — The Beirut location, Al-Hamdan told *World Environment Report* during a recent New York visit, has had a serious impact on his operations, particularly since the office had just begun to function when the situation deteriorated. Other UN agencies had alternate offices in the region, but UNEP did not. The new office was staffed with, besides Al-Hamdan, his deputy regional director, three secretaries and a driver/messenger. By the end of 1975, telephone and mail service had been disrupted to the point where it was impossible to communicate with the other countries, and it was no longer safe for the staff to come to work.

UNEP discussed the possibility of moving out of its Beirut office altogether, Al-Hamdan told *WER*, but concluded this would not be the right decision: "It would not be fair that we, as United Nations representatives, move out." Instead UNEP has opened a sub-regional office in Bahrain, which for the time being will function as the regional office in hopes that in a few months Beirut can function again.

**Booming Development** — Al-Hamdan illustrates how the region's development of its rich energy resources has affected the environment with this description of his native Kuwait: "Twenty-five years ago, Kuwait had 120,000 people. They lived in one small town and five or six villages with no more than 1,000 people in an urban area stretching only about 8 km along the coast of the Gulf. At that time, there was virtually no industry—only two factories, one producing electric power and the other ice. There was also a primitive, hand-made, ship-building industry.

"Now, in 25 years, the population has risen to over one million; the urbanized area stretches 50 km along the Gulf. Industry runs from major petrochemical plants to refineries, to water desalination plants, to major harbors, cement factories, etc., etc.

"Kuwait is only one example. It started a bit earlier than the other states, perhaps, but they are going through the same process. In 1967, I called the area from Kuwait in the north to Muscat in the south a 'mini-megalopolis.' Now it is really becoming one. In 50 to 60 years, this whole stretch will be a continuous urban development.

"Our cheap source of energy (although it is not really that cheap) led to the start of this development, and it has had an impact on the environment. The water of the Gulf is not as it used to be. There is as yet no scientific study to prove the impact of oil pollution on marine life, but I think there has been some. And thermal pollution from all those factories, especially the refineries, is increasing the temperature of the Gulf waters. All this is affecting the health and environment of the people."

The increased urbanization along the Gulf results mainly from the migration of people from within the Arabian peninsula, Al-Hamdan added, "People who used to be nomads 50 years ago are settling because of jobs, education, social and welfare services."

**Regional Action** — To cope with the rapidly increasing problems of environment versus development in the area, Al-Hamdan has been pursuing regional action among the Gulf countries similar to UNEP's successful program in the Mediterranean (*WER*, March 1, p. 1). As Kuwait's representative to the 1972 UN Stockholm Environment Conference, Al-Hamdan in his report to his government suggested a regional meeting of the Gulf countries on ways to enhance and protect the environment. Then, about two years ago, the UN Development Program (UNDP) undertook a program to study coastal development along the Gulf. Al-Hamdan had by then joined UNEP and suggested the agency become involved in the UNDP project. UNEP initially proposed to pay for adding one environmental planner to the project, but since UNDP's financial difficulties arose last year, UNEP has moved into a partnership position on the project.

A mission of seven experts, headed by George Nez, an American, visited all the Gulf countries during April and May and a first draft of its report is expected by the end of July. It is then hoped to have a meeting of experts in Bahrain this fall that will lead to an intergovernmental meeting early in 1977, Al-Hamdan said. The approach will be along lines similar to the Mediterranean program, he added, but "we will probably emphasize the relation between environment and development a bit more" because the Gulf area is now developing at a fast rate compared with the Mediterranean region, where a good deal of the industrial development has already taken place.

**Environmental Agencies** — Beyond this special Gulf project, the regional office is involved with the usual range of UNEP activities. For example, Al-Hamdan is trying slowly to build interest among the region's govern-



ments in establishing environmental agencies. He is not so concerned with the size of the agency as with establishing the interest of the governments in the subject. So far, of the 12 countries, only Kuwait has a separate environmental agency as such. But the others have established high committees headed by such officials as ministers of municipal affairs or public health. In the United Arab Emirates, for example, the environmental committee is headed by the Minister for Town Planning who also happens to be the Minister for Agriculture and Fisheries and thus is dealing with a range of environmental matters, Al-Hamdan said.

"But all this takes time," he added, "mainly because there are no specialized people from the countries themselves dealing with the environment. It's a new discipline and there are few people with the academic training. But the interest is there."

**Housing** — The subject of human settlements is also one of great concern in that region, and Al-Hamdan attended the regional Habitat preparatory meeting for all of Asia that was held in Tehran. Also, through the UN Human Settlements Foundation, UNEP has been studying two possible demonstration projects in the two Yemens. These projects would already be underway, Al-Hamdan told *WER*, had it not been for delays brought on by the Beirut situation, but the plans are now near finalization. In north Yemen, the Yemen Arab Republic, the project will assist the government to organize the institutional structure—a housing society, a credit and savings agency, or the like—to deal with the financial, legal and administrative requirements of housing construction. In south Yemen, the Yemen Democratic Republic, the project involves support for a low-income housing project for people who work at the Aden harbor. The population has increased greatly in this area due to migration, Al-Hamdan said, since the country became independent from the British, but suitable housing has not been built.

The UNEP office is also interested in environmental information and education. Under a joint project with UNESCO's environmental information office in Paris, UNEP sponsored a survey of the West Asian countries that resulted in a report on how to spread environmental information through the region's news media, with particular attention to World Environment Day (June 5).

Another area of activity is environmental health. The UNEP office sent the head of the Environmental Health Department at Beirut's American University to south Yemen to help the government organize an Environmental Health Division within its Ministry of Public Health.

**Parks and Wildlife**—His office is also very much involved at the study stage on a system of national parks and nature preserves for the region. Al-Hamdan told *WER*. A meeting in Nairobi in January of this year resulted in a draft project that has been sent to all the

governments and interested agencies, such as the Food and Agriculture Organization (FAO) and (UNESCO), and hopes are high for implementation.

Even though West Asia is more than 90 per cent desert or semi-desert, Al-Hamdan said, it has some very beautiful areas. But the rapid growth in population is destroying these areas, and the popularity of hunting among the peoples of the region has wiped out many animal species completely—for example, the oryx. But now many of the region's leaders are interested in protecting endangered species, Al-Hamdan noted, through nature preserves, recognizing that it is in their long-range economic interests to do so.

As for national parks, he said, there are beautiful areas in Yemen, in southwest Saudi Arabia, in Oman and in northern Iraq that would lend themselves to park status. UNEP is working hard to introduce the concept of nature preserves and national parks into the national land use planning of the region. So far, Al-Hamdan said, this is rarely seen, but the interest is growing. There have already been two projects conducted under the auspices of the International Union for the Conservation of Nature (IUCN) and the World Wildlife Fund (WWF) in Oman, and UNEP has been developing a project (stalled by current events) in Lebanon. However, hopes are high for accomplishing something in the near future, he said.

Al-Hamdan, who was educated on scholarships in the U.S., particularly at the University of Arizona, was head of the Department of the Environment and Planning Board in Kuwait before he joined UNEP in March, 1975. Before that, he was Director of the Master Planning Department for Kuwait Municipality, responsible for the national physical plan for the state.

"I have many ideas in the environmental area," he told *WER*, "but whether it is possible to accomplish them is hard to say—it will take time, especially on the regional basis. If you take one nation and convince the highest official in the country, then it's easy to win it. But when you want to create a working relationship, then it takes time, takes convincing, and you have to prepare yourself."

JRM

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#### Belfast's Water (continued from p. 2):

counties in a grid within which supplies can be transferred as needed. In addition, Ireland's largest lake, Lough Neagh, is to be tapped for 25 million gallons per day. This water will be treated and pumped to Belfast, but the department's engineers anticipate a sharp rise in water rates as a result. Meanwhile, a reservoir of 1.7 billion gallons is being held in the Mourne Mountains for the summer, and the department hopes to avoid severe restrictions if rainfall returns near normal.

TOM Mac SWEENEY



## India Housing: 70 MM Dwelling Units Found Urgently Needed

**NEW DELHI**—The Indian Government has announced plans to establish a National Commission on Housing to deal with the country's staggering housing problem. H.K.L. Bhagat, the Union Minister of State for Housing, told *World Environment Report* that "as matters stand at present, we will need construction of 50 million dwelling units in rural areas and 20 million units of urban residences." The hope is to do so without sacrificing environmental protection, he noted.

The factors creating this problem are twofold: India's population is increasing at the rate of more than one million per month, and, although 80 percent of today's population of 610 million lives in 560,000 small villages, there is a strong move toward the towns and cities.

India had high hopes that the UN Habitat just completed in Vancouver, (see story on p. 1) would produce useful guidance for dealing with its housing problems. Prime Minister Indira Gandhi hailed it as "an international demonstration for governments to project a system of values which cuts across national boundaries." India sent a 13-member team to the meeting.

For now, the government is attacking the housing problem in a number of ways. First, in many areas, although there is a shortage of funds to build new tenements, slums are being improved through road paving, construction of schools and playgrounds, drinking water and electrical connections, radio and TV sets, and planting of trees and gardens. The government is also attempting to improve living conditions in the small villages so as to slow the influx to the cities. Priority has been given to extending electrification, with villages in Punjab and Haryana states now fully electrified and Kerala and Tamil Nadu states approaching completion. Doctors and teachers are given incentives to settle in villages, and retired army personnel are given land and housing sites. Also provided are drinking water facilities, open air films, TV and radio, and small-scale rural industries.

These programs are part of a national scheme for future distribution of population to make optimum use of existing resources. It includes minimizing migration to the cities, narrowing the gap in living standards between urban and rural settlements and providing incentives to less privileged sections.

The proposed National Commission on Housing will direct the program at the national level with an eye for utility, comfort, beauty, environment and pollution control, according to government spokesmen. It is hoped to float a huge national housing fund of billions of rupees to meet the needs of the next quarter century, with money drawn from various sources.

A government report estimates the population will rise to 945 million by the year 2000, with a density of 299 per sq. km., up from 178 in 1971. The rural population over the next 25 years, the report says, will rise by from 130 to 225 million, and the urban population will rise by 175 to 270 million (compared with 100 million today).

An experimental resettlement scheme has been tried near the ashram (retreat) of Mahatma Gandhi in Gujarat state in which 2,250 slum families were relocated. The slum dwellers themselves participated in planning and execution of the project, which was funded in part by international voluntary agencies, such as Britain's Oxfam.

The government's population control program (*WER*, May 10, p. 4) is also regarded as part of the answer to the housing problems.

R. SATAKOPAN

## New Road Building Program Is Highest Priority in Haiti

**PORT-AU-PRINCE**—Haiti's development is being seriously impeded by its deteriorated roads. Outside of the capital city of Port-au-Prince, travel is virtually impossible by automobile, and even during optimum conditions, heavy trucks or four-wheel drive vehicles are needed to go from city to city. At the height of the rainy season the roads are impassable.

As a result, agricultural products cannot reach ports and major markets, the high cost of transporting building materials has depressed construction, and essential supplies must be transported by air or boat—frequently making the cost to the consumer prohibitive.

Although Haiti is a tourist paradise with scenic mountains, rural villages, and turn-of-the-century cities, the visitor is restricted to the spots he can reach by air. There have been many accidents and fatalities sustained by rural Haitians travelling by local buses. The major reason for rural road deterioration has been lack of maintenance.

But this situation is being vigorously dealt with. Presently under construction is a vast \$17 million program to provide a first-class road network for all of Haiti. This ambitious project is being financed by the International Monetary Fund, the Interamerican Bank for Development, and other world lending agencies.

To make sure that the construction pays off, the Haitian Government has established an autonomous agency, best known by its acronym of SEPRRN, to provide permanent maintenance of the newly built national roads which are expected to be completed by 1980. Meanwhile work has begun on a \$756,000 program for the construction of service center complexes in Port-au-Prince, Cayes, and Jacmel designed to provide maintenance and major overhaul facilities for the agency's more than \$2 million of road equipment and vehicles.

According to Scott L. Behoteguy, chief of the U.S. Agency for International Development in Haiti, the Haitian government had pledged \$11,660,000 in operating budgets, while USAID is providing \$5,130,000 in loans and gifts for equipment, garages, and organizational help.

ARTHUR CANDELL



## In Brief...

### India Forbids Its Air Space To Concorde Supersonic

The government of India has refused permission for the Anglo-French supersonic Concorde plane to fly across that country. Civil Aviation Minister Raj Bahadur told questioners in parliament—where the decision was announced—that although possible injurious health effects have not been proved conclusively, the fact was that the Concorde had been allowed to fly over Europe only at subsonic speed but “they wanted to fly at supersonic speed over us.”

Minister Bahadur also noted that when the Concorde had been permitted a trial flight at subsonic speed on the Bombay-Madras route, it “produced lots of protest from our people. We are prepared to share the experience and pay the price but only on reasonable terms.” He described as “completed unfounded” British press reports claiming that India was demanding major civil aviation concessions from Britain before allowing the Concorde full fly-over access. He also said that a national commission was studying the problem of the bunching of aircraft at night at Delhi and Bombay, and might follow Japan's practice of banning landing operations of international flights at night.

### World Environment Day Marked By UNEP's Executive Director

In a special statement marking World Environment Day on June 5, Dr. Mostafa Tolba, Executive Director of the United Nations Environment Programme (UNEP), stated that unless people everywhere recognize that the earth's natural resources are capital assets to be husbanded, the world is headed for bankruptcy. “On the other hand,” he continued, “if these resources are used rationally they will continue to yield a steady

income ensuring not only our survival but the security of future generations.”

Emphasizing that the most important single problem confronting the world is that of attempting to satisfy basic human needs, Dr. Tolba observed that “It is no longer possible to regard the objective of ‘the greatest happiness for the greatest number’ as attainable; rather, it would be more realistic to try to minimize the extent of human suffering in the world. As we view that situation on World Environment Day, certain inescapable facts can no longer be ignored,” he went on. “The change which must take place throughout the world—especially for those hundreds of millions whose living conditions are getting worse—has to take into account the environmental consequences of development.”

Further in his statement the UNEP official pointed out that energy use was one graphic example of how the rich and the poor were alike guilty of polluting because the rich were consuming far more than they needed and the poor were often forced to scrape up enough fuel to cook their next meal by stripping the forests and exposing vast land areas to erosion. “This process,” he said, “will provide the most serious ecological challenge of the age... and yet what alternative can we offer to more than one-third of mankind which must use wood for cooking or heating?” He concluded by noting that despite all the wonders of modern technology, no other practical, cheap fuel has been found for this large part of the world's population. But he added that UNEP was intensively engaged in seeking such alternatives.

Less than two weeks prior to World Environment Day, Dr. Tolba had commented in greater detail on this very problem in a Tokyo address before the International Symposium on Environment. In this talk the Executive Director cited such problems as eroded hillsides in Indonesia, slash-and-burn agriculture in the Philippines, Himalayan deforestation, overgrazing in Africa, and fertilizer contamination in Japanese groundwater, lakes, and rivers. What was

needed, and what UNEP was trying to find Dr. Tolba said, were new sources of energy to replace firewood, more organic fertilizers, more rational use of existing pesticides, and the development of ecological pest management systems.

Warning developing countries against “blindly adopting foreign technologies,” Dr. Tolba said that such technologies could prove inappropriate for the recipient country's socio-economic and environmental objectives.

### Mexico Must Build New City Of 1 MM Every Six Months

Within the next 25 years, Mexico will have to construct a city of one million inhabitants every six months to handle the projected population. This dire prediction was made by Federico E. Lamicq before the Mexican National Meeting on the Future of Cities and Their Costs. Mr. Lamicq, president of the meeting's organizing committee, also suggested that the Mexican Society of Cost Engineers establish a separate institute to investigate the staggering costs of building such new cities from scratch.

### British Maritime Policy On Pollution Is Criticized

A report critical of British maritime policy has been recently released by the Advisory Committee on Oil Pollution of the Sea (ACOPS). Founded in 1953 in Great Britain, the non-statutory body includes local government, shipping and port authority associations, sea fisheries committees, and wildlife organizations. The main thrust of the ACOPS report is that there is no general overview or consultation with all the interests affected even though almost every British government Ministry has some say in policy making on various aspects of sea use.

Disappointed with the “somewhat low profile performance” of the



British Delegation at the Geneva session of UNCLOS III, ACOPS has drafted four main amendments to the Informal Single Negotiating Text (SINT) provisions which were subsequently discussed with the British Delegation at the New York Law of the Sea session. These amendments suggest that in enforcing pollution control, port state jurisdiction should not be limited to a specific number of miles from the coast, since the source of pollution could not always be identified and could come from further afield. They also support the British Government's stand on functional rather than absolute immunity for State merchant ships from this jurisdiction.

Alluding to the fact that present SINT provisions do not clearly regulate pollution from support vessels, ACOPS urged the British government to help close this gap by re-introducing a proposal on this initially submitted by Canada and Iran at the 1973 International Conference for the Prevention of Pollution from Ships.

### Bulgaria Moves Energetically To Improve Environment

Energetic measures to improve the the environment are being accelerated in Bulgaria, according to a recent article in *Zemedelsko Zname* by Stamen Stamenov, Deputy Minister of Forests and Environmental Protection.

The recent construction of 162 new water purification plants, Mr. Stamenov stated, has resulted in a five-fold increase in the volume of purified industrial and public water. The addition of these installations, the article says, brings the total number of such plants to 557. In addition, Bulgaria now has 536 installations for waste gas that are preventing an estimated 500,000 tons of polluting particles from being discharged by industrial firms.

He also reported that the use of toxic substances is being curtailed or dropped altogether in farming, and

that considerable work is under way in restoring land that had been quarried or mined by the open-pit method. Finally, he said that the new five-year environmental plan extending through 1980 calls for the construction of another 749 industrial and 53 town purifying stations, with 48 of these to be used for air purification. Included in the plan is a proposal for Bulgarian cooperation with other nations in preventing pollution of the Danube River.

### Industrial Pollution Called Serious in Parts of Taiwan

Pollution in Taiwan has reached serious levels in many industrial areas, according to Rolf T. Skrinde, vice president of the U.S. firm Reynolds, Smith and Hills, after a two-week survey of industrial waste treatment in plants both inside and outside Taiwan's industrial parks.

Of seven parks surveyed, Skrinde said, Neili, Kweishan and Liutu have pollution problems despite the existence of waste treatment facilities. He urged that a realistic approach to solving industrial problems step by step be adopted, and that a national pollution prevention commission be established to aid the government in developing priorities for industrial pollution control measures.

### Plans Afoot to Stem Erosion of Ghana's Coastline

Work is scheduled to start next year on a comprehensive ten-year program to combat erosion of Ghana's coastline by the sea. Drawn up by the Architectural and Engineering Services Corporation, a state agency, the plan includes a \$2 million preliminary dam at Keta, where erosion and flooding are worst. Three Dutch experts who toured Ghana in April recommended immediate construc-

tion of an outfall at Kedzi, near Keta, to check erosion. They added that further studies are needed to establish reasons for the Keta erosion before a final plan can be drawn.

A relaxation center for Germans from adjacent Togoland before World War I, Keta has been whittled down by the sea and the action of the Keta lagoon from two miles wide to a slice of land only 100 yards wide at some points and 50 yards at others, with greatly reduced population. Elsewhere, erosion has driven almost the whole population from Azizanya, a fishing village near the Volta estuary, and is eating away at several coastal points. Sand is redeposited to rebuild the beach at Winneba, about 34 miles west of Accra.

An added problem at Keta is that the area is mangrove swamp below sea level and therefore subject to severe flooding. For this reason, land reclamation along the Keta littoral is considered technically infeasible unless the whole area is filled to above sea level, at prohibitive cost. This has led to scepticism about the erosion program and charges that, for political reasons, the government won't face the only practical solution—moving the inhabitants elsewhere.

### Japan Aids Thailand's Environment Programs

Japan and Thailand have joined in efforts to protect the Thai environment from industrial wastes. This cooperation was agreed to in principle in 1974 when Prime Minister Kakuei Tanaka visited Bangkok. In March of last year a Japanese Government mission was sent to Thailand to discuss the means for cooperation, and four Thai trainees are to come to Japan by July of this year for on-the-spot study of Japanese environmental protection efforts. Japan also has plans to offer \$166,666 worth of equipment for the projected Water Pollution Prevention Institute in Bangkok.



## Citizens' Groups in Tokyo Monitor Nitrous Oxide in Air

Under the guidance of the Tokyo Citizens' Movement to Build a Better Living Environment, approximately 300 private concerned groups in the Japanese capital and the surrounding prefectures have established an unofficial system for checking the volume of nitrous oxide in the atmosphere.

A total of 22,000 atmospheric measuring stations have been set up in Tokyo and six outlying prefectures using litmus paper placed in bottles. The test papers are collected at the end of 24-hour periods to determine the chemical contents of the paper.

Organizers of the survey said the tests have the advantage of being scientifically accurate and simple enough to allow many volunteer citizens to participate. Responsibility for conducting the chemical analysis of the litmus paper lies with the Tokyo Meteorological Research Institute, but there is no governmental censorship of the results.

Probably early in July a comprehensive map of nitrous oxide pol-

lution in the seven regions will be completed and publicized. It is then hoped that this map will convince municipal authorities that there has been a recent tendency by local industries to relax their standards concerning emission of nitrous oxide. It is also hoped that similar efforts by private environmental groups in other parts of Japan, particularly in the industrial regions, will be mounted over the summer months ahead.

## Japan Warned it Must Recycle More of its Waste Products

Japan must increase its efforts to recycle more of its industrial and domestic wastes while also endeavoring to extend the life of its present durable products. This was the warning issued recently by the Japan Economic Research Council. The JERC officials, who noted that Japan depends on overseas resources for 80 per cent of its energy needs, 90 per cent of its ferrous and nonferrous metal supplies, and roughly 90 per cent of its food, reminded the Japanese people that is mandatory

for them to recycle wastes if the economy is not to suffer further.

Currently the country is recycling only about 16 per cent of its annual industrial wastes, metal and chemical combined, totaling upwards of 400 million tons. Only the steel industry is recycling more than half of the nation's scrap iron—40 million tons last year alone.

Household wastes in Japan average out to roughly 35 million tons per year, but only a small percentage of this in the form of paper and metals is recycled annually. Moreover, very few incinerator plants use heat generated by burning domestic wastes for producing hot water or power.

Although Japan's garbage totals about 38,000 tons a day, very little of it is used as animal feed or as fertilizer. According to a JERC estimate, the total volume of wasted food nationally is sufficient to produce the equivalent of a million pigs. Nevertheless, neither the central nor the local governments are providing the subsidies necessary to encourage the recycling of waste food as animal feedstuffs.

## Calendar...

**July 1-2**—Fourth Inter-Secretariat Meeting on Environmental Problems in the European Region. Geneva. UN Environment Programme (UNEP) and UN Economic Commission for Europe (ECE).

**July 5-9**—Consultation of the Objectives and Design of the WHO Air Quality Monitoring Program. Geneva. World Health Organization (WHO).

**July 12-16**—Working Group on Oceanography and Data Exchange. New York. Intergovernmental Oceanographic Commission.

**July 14-16**—Eighth Bicycle/Pedestrian Seminar. Toronto. Sponsored by Metropolitan Association of Urban Designers and Environmental Planners.

**August 2-7**—Second Scientific Conference on Weather Modification. Boulder, Colo. World Meteorological Organization. (WMO).

**August 9-17**—Symposium on Atmospheric Ozone. Dresden. Sponsored by WMO and the International Association for Meteorology and Atmospheric Physics (IAMAP).

**August 19-28**—Symposium on Atmospheric Radiation. Garmisch-Partenkirchen. Sponsored by WMO and IAMAP.

**August 30-September 3**—Symposium on Problems Related to Solar Energy Utilization. Geneva. Sponsored by the UN Educational, Scientific and Cultural Organization (UNESCO) and WMO.

**September 1-3**—Working Group on the long-Term Effects of Air Pollution on Respiratory Diseases in Children. Katowice, Poland. European Regional Office of WHO.

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27-October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden. ELMIA Exhibition/Conference Center.

**September 27-October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27-October 1**—Committee on Water Problems. Geneva. ECE.

**September 27-October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.





# World Environment Report

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## HUMAN SETTLEMENTS: Was Habitat the Last World Conference?

**VANCOUVER**—Habitat: the United Nations Conference on Human Settlements, held in Vancouver between May 31 and June 11, expired on a grim and unhappy note (*WER*, June 21, p. 1). Subsequently, United States delegate Christian A. Herter summed up his feelings: "Habitat was a challenge to comprehend and to conquer the most complex set of historical forces ever debated by a world forum. But we are sorely disappointed that so much time and effort has been expended in discussion of problems of a political nature essentially extraneous to the substantive work of this conference. There is good reason to believe that public esteem for the United Nations will be seriously impaired by this record. Continuation of this type of tactic does not bode well for my country's support for and participation in future UN conferences concerned with global problems demanding international attention."

He spoke for many delegations, including several who had reluctantly gone along with the blatant—and unhappily wholly successful—tactic of a few delegates to politicize, polarize, and poison the largest, best prepared, and most expensive United Nations conference ever held. How exactly did this come about?

There is blame and enough to spare. Although it may sound ungrateful to the host country, it needs to be said that the Canadian Government must assume part of the responsibility, if only for its well-meaning innocence. Almost to the end, the Canadians believed that they were dealing with reasonable people capable of a response to rational argument. Too late they discovered that they were not, that any concession was regarded as a sign of weakness, and any further opportunity for "negotiation" was only too eagerly seized upon as another opportunity for delaying tactics. By the close, the Canadians were reduced to emotional appeals for sanity to an utterly deaf, indifferent, and contemptuous group, of whom the Cuban, Iraqi, and P.L.O. delegates must be accounted the most implacable, and with the Syrians, Algerians and Libyans not far behind. The Canadians were shocked, astounded, and mortified by the brutality of their opponents and stunned by the complete failure of their alleged special relationship with the Third World.

On the other hand, the reverse tactic also backfired. Serious fault can be taken with the vehemence of the United States reaction to the Declaration of Principles produced by the Group of 77 in the early hours of June 5, and which contained the notorious reference—well con-

cealed but clear—to the General Assembly resolution 3379 linking Zionism and racism. Tactically, some mining and sapping of the 77 might well have broken up the monolithic unity on which the Arab and Cuban delegations were relying. As it was, the American reaction foreclosed that possibility. It is only fair to say, however, that it was, in view of many participants and observers, very doubtful that the situation could have been retrieved after the Arab-Cuban coup, and unquestionably the American indignation—fully shared by the Western group—was fully merited. Nonetheless, a more subtle reaction might have paid some dividends.

But what of the "77" themselves? For most of them, this was a conference of real and urgent importance to their peoples. Most important of all was the establishment of funds and programs to relieve the urban and rural squalor in their countries, in which the West must be involved to a considerable extent. Nevertheless, in following, however reluctantly, the radical and obsessed minority, they threw away what possibility there had been of a serious and concrete follow-up. Perhaps it was the case that they did not realize what was happening to them until it was too late.

The tragedy was all the greater because the first week of the conference had been highly successful. The use of the audio-visual material in plenary and the committees had silenced most of the cynics. The general standard was not particularly high, with some outstanding exceptions, but the cumulative effect was considerable. A Nigerian film on chaos in Lagos, a Ugandan one on land resettlement, and a British "capsule" on the social drawbacks of high-rise apartments and demolition of old houses, struck this observer as among the most effective! The American contribution, sad to say, did not match this standard.

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The three committees were hard at work, the general debate in plenary was interesting and of good quality, and at the Habitat Forum, in three imaginatively converted aircraft hangars, a series of lively debates were in progress. Barbara Ward had given the first of the distinguished lecture series in the plenary, a characteristically scintillating and provocative *tour de force* that did not convince all listeners but fully merited her standing ovation. The only cause for complaint was the weather, reminiscent of the West Coast of Scotland at its least amiable, and which made the Habitat Forum particularly bleak and uncomfortable.

But the political weather had already worsened. There was the ritual walk-out when the Israeli delegate rose. There was the ritual wrangling in the credentials committee. There was a formal protest at the dispatch of a form letter several months ago to the Jewish Mayor of Jerusalem. The issues of Western Sahara and Cyprus had surfaced. But, in contrast, the committees' work on the recommendations for national action and international cooperation seemed to be going well, and the conference atmosphere was good.

But the second week was dominated by the political issues, and the atmosphere became so tense and harsh that it obscured the really useful work that had been done in Committees II and III on national action, and which was approved by the plenary. Even here, however, Cuba insisted on an amendment dealing with Israeli occupied territories, and the Group of 77 overruled the President's ruling that it was a matter of substance requiring a two-thirds majority. On Committee III's report Syria introduced an amendment on the same lines, which was again forced through by the majority. So, even in these basically non-political technical documents the Middle East situation was rammed down the throat of the conference.

It was not, of course, all loss. The preparatory process had been excellent, as had been the documentation prepared by the Secretariat. The recommendations for national and international action could eventually have a real influence upon governments. Public interest in the whole matter of settlements had certainly been raised. It can only be hoped that governments, the Economic and Social Council, UNEP, and the next session of the General Assembly will concentrate upon, and develop, the positive elements of Habitat and ignore the extraneous political matters. But, as things stand now, this seems a somewhat tenuous hope.

Finally, it should be noted that some of the architectural exhibits at the adjunct nongovernmental conference, Habitat Forum, were of a high and imaginative order. Among the best were a log cabin, built of scrap logs interspersed with masonry to provide high-insulation walls nearly a yard thick; a big plastic igloo; a house made of sulphur blocks costing only four cents each, and made of a simple mix of melted sulphur and sand poured into molds; and some new versions of geodesic domes.

SPECIAL DISPATCH TO WER

## Egypt Signs Power Generating Agreement With Four Nations

**CAIRO**—Since President Anwar Sadat's recent visit to Europe, four European countries—France, Italy, Yugoslavia, and the Federal Republic of Germany—have signed power generating agreements with Egypt. These projects are targeted to provide electricity for 780 Egyptian villages by the end of 1976, and raise the total number of villages with electrical self-sufficiency to 2,500.

According to El Sayed Ahmed Sultan, Minister of Electricity and Power, West Germany has earmarked \$5 Million for studies in the Quattar Depression Project and has committed about as much again for follow-up studies. An agreement has also been signed for a loan \$25 million, at one per cent interest, for the construction of a thermal power station at Suez.

Under the agreement with France, that country has agreed to build a turn-key solar energy power plant with 1,000 KWH capacity, the largest of its kind in the world. A second solar plant will be constructed jointly later with Egypt at an undisclosed site between Aswan and Luxor.

Italy's contribution, the Minister said, will consist of studies on the electrification of railways and the training of electricians. And Yugoslavia has agreed to assist with the production of light passenger cars and the installation of a mechanical drilling company.

The Minister also signed an agreement with the United Nations Development Program (UNDP) for a \$1 million loan to continue rural electricity studies. The present five-year plan calls for the lighting of 2,000 more villages and the electrification of numerous irrigation works.

JOHN M. BRADLEY

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## LATIN AMERICA: CIFA Will Train Environmental Specialists

**NEW YORK**—Taking cognizance of the pressing need for more Spanish-speaking environmental specialists in Latin America, the United Nations Environmental Programme (UNEP) signed an agreement last October with the Spanish Government for the establishment in that country of an International Center for Training and Education in Environmental Sciences for Spanish Speaking Countries (*WER*, Nov. 24, 1975, p. 8).

Funded jointly by Spain and UNEP, the new environmental center, known as CIFA, has spent its formative months establishing quarters in Madrid, recruiting staff, formulating teaching courses, and touching base with other organizations that deal with the environment. Then in May of this year, CIFA became fully operative, and soon thereafter its director, Alfonso Santa-Cruz, while on a business trip to New York, gave *WER* a progress report on this newest of UNEP ventures.

**Joint Mission**—The training courses, Santa-Cruz explained, will be given not only at CIFA headquarters but will also be held elsewhere in Spain at selected universities, and throughout most of Latin America at specialized institutions. Among those selected thus far are the Center for Ecology and Renewable Resources in Cordoba, Argentina, and a similar institute in Bogota, Colombia; and at a center for agronomical and tropical research in Costa Rica. In addition, a joint exploratory mission of CIFA/UNESCO/UNEP Regional Office in Mexico yielded other environmental contacts in Chile, Peru, Uruguay, and Venezuela.

Thus far, CIFA's in-house teaching staff consists of nine professionals whose specialties encompass ecology, engineering, architecture, and economics. "The work of these experts," Santa-Cruz said, "will of necessity be supplemented by visiting professors—many with more scientific backgrounds—from other organizations. In our first 15-day course/seminar, given last May, we had the services of 21 visiting professors, 18 of them from Spain, two from Latin America, and one from France. As our post-graduate students—or participants, as we often call them—only numbered 30, it is plain that the ratio of teachers to students is extremely high."

**Pilot Course**—This first pilot course, titled "The Environmental Dimension in the Development Process," will be followed over the next few months at CIFA headquarters by three other short courses dealing with such subjects as the environmental impact arising from new public or private projects; local corporations and the environment; and human settlements, the latter to be focused on the evaluation of the conclusions and recommendations of the Habitat conference recently concluded in Vancouver (see page 1).

These short courses, which generally consist of three daily lectures and two practical exercises of case studies, plus a workshop, will be followed next September, also in

Madrid, by a more ambitious three-month course on environmental management and development. "This general course," Santa-Cruz said, "will be aimed primarily at administrators, high public officials, and economists. It is vitally important that we reach and teach the prime movers in society who must deal realistically with environmental problems. The course will therefore be action-oriented and will offer instruction pertinent to decision-making. So, in addition to the theoretical lectures, many specific environmental disputes will be minutely analyzed in workshop groups.

**A New Ph.D.**—"If this sounds overly ambitious," Santa Cruz went on, "it must be realized that we are concentrating our teaching on the graduate level. Not only shall we provide a certain number of fellowships to advanced students, but between our courses given at CIFA and those taken at the other environmental institutions we would expect various colleges and universities to honor these credits. We hope, too, that these credits, coupled with formal science courses given by accredited educational facilities, will enable some of our students to qualify for a new kind of doctoral degree—that of the Ph.D. in environmental sciences. In fact, CIFA has in its mandate the task of establishing a curricula for such a degree, and we are in contact with various universities on the matter. Meanwhile, we must, of course, prove ourselves and demonstrate that our academic instruction measures up to the Ph.D. level."

For the most part, Santa-Cruz said, CIFA will depend on its academic partners for the recruitment and initial screening of potential students. Still another resource for finding appropriate applicants is the United Nations Economic Commission for Latin America (ECLA), which, Santa-Cruz pointed out, has already worked closely with CIFA to establish its Latin America network of collaborating institutions.

**Natural Resources**—Two additional programs for the remainder of this year will take place in Latin America. The first is a 15-day course to be held in Lima, Peru, with the collaboration of the Oficina Nacional de Evaluacion de Recursos Naturales (ONERN), on the management of natural resources. Created in 1962, ONERN, the director of CIFA points out, has had plenty of time to acquire great expertise in that subject, the importance of which is magnified in developing countries because they depend principally on their natural resources, rather than on any heavy industry, for the health of their economic base.

Probably also in November, CIFA will hold a three-week course in Santiago, Chile, with the active participation of ECLA. Devoted to studying the interrelations between water, development, and environment, this course will attempt to analyze the material produced by UNEP's Project ADFMA, including a case study of several hydrographic basins in various Latin America countries.



**Basic Library**—While Santa-Cruz carries on an ever-widening personal dialogue with universities and governmental organizations throughout Latin America, his administrative associates back in Madrid are finally getting a start on building a basic library to support the center's activities. Once the proper literature has been assembled, CIFA intends to translate, reproduce, and distribute relevant government documents on environmental subjects and will attempt to provide a similar service by centralizing and coordinating significant information from other, unofficial international sources. The center's information and communication section also intends to compile, select, and distribute bibliographical references on specialized environmental problems.

A Chilean by birth, Santa-Cruz took his law degree in Chile and his economics degree at Harvard. And as befits a long-time administrator-diplomat both for the United Nations and for his country (serving as Chilean Ambassador to Belgium, Luxembourg, Austria, Czechoslovakia, and Hungary) he is fluent in English, French, Spanish, and German. And finally, as an advisor to the UN on environmental issues in the early seventies, Santa-Cruz played a prominent role at the Stockholm Conference on the Human Environment.

"So you can see," he said, "that I have been fortunate indeed, since that great international leap forward, to be able to continue working in the field of the environment, first as UNEP's regional representative for Latin America, based in Mexico, and now as UNEP's director of CIFA. I was recently amazed but pleased to see a poll which showed that some 60 per cent of the people interviewed put as their first interest the environment, more than were concerned with education or with unemployment. That growing concern is extremely encouraging to us environmentalists."

A.W.

## Italy Enforces a No-smoking Rule In Enclosed Public Places

**ROME**—The no-smoking rule in enclosed public places is now being enforced throughout Italy in movie houses, theatres, dance halls, night clubs, museums, waiting rooms, and other closed public meeting places. But smoking is still allowed in places with efficient air-conditioning.

The law on no-smoking in public places, which was enacted last November and then spelled out more specifically last month, authorizes fines of up to \$12 on individual offenders and up to \$120 on managers of public places who wink at the regulations.

No-smoking notices must now be displayed outside and inside public places. Even where there is air conditioning, and smoking therefore may be allowed, certain standards of efficiency must be met: the turn-over of 20

cubic meters of fresh air, per person per hour, a relative humidity of between 40 and 60 per cent (40 to 50 in the summer), and a temperature of 18-20 degrees Centigrade.

Should the conditioning system fail, and air standards drop, the words "no smoking" have to be flashed to all patrons on light panels, which are monitored continuously and which are automatically switched on when air standards are violated. One engineering expert of the National Health Institute, who helped design the controls told *WER*: "The automatic system will give a share of the control over smoking to health-conscious citizens."

Since the new air standards were only officially proclaimed and promulgated late in May, thousands of public places, many of them first-class cinemas, have yet to improve their current air conditioning systems or to install brand new equipment where necessary. The relatively few new cinemas that already operate efficient systems are awaiting official inspection and the sealing of components before they can remove the "no-smoking" notices.

During the first few days after the new rule went into effect, the Italian press reported only a few instances of violation. But the reported comment of one movie-goer that "New brooms sweep clean" obviously was not completely true because cigarette butts were found on the floors of many movie theaters, especially those in the lower priced brackets.

Some cinemas in Palermo, Sicily, have adopted a sort of compromise by adhering to the strict no-smoking rule but instituting longer intermissions to allow hardened smokers to go outside and enjoy a cigarette in the open air. This scheme seems to be catching on in other Italian towns and villages.

VITTORIO PESCIALLO

## New Editor...

With this issue, Albert Wall replaces James R. Marshall as Editor-in-Chief of World Environment Report. Mr. Wall is a technical writer and former chief Editor of McGraw-Hill World News, with responsibility for the journalistic performance of headquarters editors, nearly 80 staffers in 18 bureaus, plus more than 100 part-time correspondents. Prior to that, he worked on three medical publications and as an Associate Editor of Newsweek.

A Phi Beta Kappa graduate of Vanderbilt University, Mr. Wall is a Governor of the Overseas Press Club, and a member of the American Society of Magazine Editors, the National Association of Science Writers, and Sigma Delta Chi.

Mr. Marshall has been appointed Director, Public Affairs Division, for Region II (New York, New Jersey, Puerto Rico, and the Virgin Islands), the U.S. Environmental Protection Agency.

We wish Jim well in his new assignment.

WB



## Finland Finds Peat a Cheap Source For Generating Energy

GENEVA—The United Nations Economic Commission for Europe (ECE) recently declared here that peat holds exciting promise as a modern source of energy.

The ECE spokesman said that this salient fact emerged from a seminar held in Varna, Bulgaria, last April, where Finnish experts reported on their extraordinary success in turning peat into energy. The seminar was held to discuss technologies for use of low calorie fuels.

Erkki Ekman, of the Finnish Technical Research Center, reported that his country had peat in plenty: the vast bogs cover about 10 million hectares, or one third of the country. This peat, he said, was an economical source of energy even before the rise in world oil prices. The peat suitable for fuel amounts to about 42,000 million cubic meters, which is the equivalent of some 2,000 million tons of oil, so it obviously can make a vital contribution in a country which has no oil, natural gas, or coal resources.

The report said that although Finland has enough peat to meet its present total energy consumption for about 40 years, by no means can all the swamps be exploited economically as a source of energy or as industrial raw material. The swamps are also suitable for tree growing, and the country is already well on the way to its goal of draining and planting two-thirds of the peatlands.

About five per cent of the total peatland area, it is estimated, is suitable for economic production of fuel now, using as yardsticks the proximity of the deposits to the centers where the peat will be burned, its area, quality, and thickness.

The use of peat to generate energy for heating, Ekman reported, will reduce the need to store fuel to meet energy crises arising during the extremely cold winters. Annual production of milled peat is planned to rise to 20 million cubic meters by 1985 and will correspond to about two million tons of oil.

This factor alone could make an important difference in the Finnish balance of payments, as well as providing 4,000 jobs and creating a profitable domestic energy business.

A plant is now being constructed for the making of peat coke and peat briquettes, and the conversion of peat into active carbon is being studied. Other plants have been built to transform the less decomposed peat in surface layers into garden peat and material for soil improvement. Such material can also be used as a base for products to combat damage done by oil spills and as a filtering agent in the refining of waste water.

Environmentally, Finnish peat is a "good" fuel because it contains little sulphur. When burned it leaves less ash than the coal customarily used in Finland, and at least one-third of the sulphur content remains in the ash. Therefore, as peat power plants grow in number, so will the piles of ash. But even some of this can be recycled for use as a fertilizer in tree planting on peatlands.

Since the investments needed for peat-burning boiler plants are still considerably higher than those for oil

burners, the price of peat per heating unit has to be lower than that of oil to be economical. The Finnish report claims that the prospects of keeping peat competitive with imported fuels are particularly good in the central and eastern zones and in certain northern areas. Transport of peat accounts for a significant part of its price at the heating plant.

WILLIAM J. MAHONEY

## Old Dutch-Built Canals Are Being Restored in Sri Lanka

COLOMBO, Sri Lanka—The international energy crisis that vastly increased fuel prices has induced the government here to restore and make fresh use of its old Dutch-built canal waterways, dating from the 18th century, that have been allowed to crumble and perish. Legislation is being prepared for the establishment of a Canal Development Authority. Meanwhile, a special Canals Division is functioning under the Ministry of Housing and Construction.

As a first step, the restoration of the Columbo-Puttalam canal—which stretches out 80 miles into the rich coconut growing areas—has already been inaugurated by Prime Minister Sirima Bandaranaike and dredging and reinforcing of the canal banks has begun. All in all, the project is expected to take five years and cost \$6 million.

Says Pieter Keuneman, Minister of Housing and Construction, whose Dutch Burgher ancestry and responsibility for holding down building costs have given special impetus to the restoration: "The first stage of our project is a crash program of accumulated maintenance work designed to overcome the neglect of many decades. But we do not intend merely to restore the canal for manual operation of barges by tow-rope or punting but to eventually enable it to move cargo by mechanized means."

Recent studies, Keuneman said, show that large volumes of heavy cargoes, including building material, coconut fibre, salt and food consignments unloaded at the Port of Colombo, can be conveniently moved through a restored canal. Moreover, a large number of brick and tile factories abut the water way, and many of the mills that turn out some 300,000 tons of coconut products are situated within reasonable distance of the canal's pathway. More than 10,000 tons of salt come from the Puttalam salterns, while 800,000 tons of food imports move every year to a warehouse complex at Welisara—about nine miles beyond the Colombo harbor, and thus conveniently serviced by the canal.

Although the Colombo-Puttalam canal has the highest priority because it is in the least bad state of repair and is considered to have the highest cargo potential, it is only part of the intricate canal system along the island's western and southern seaboard. It is thus envisioned that some day the entire waterway complex will be once again fully operative as it was in the time of the Dutch colonizers.

MANIK DE SILVA



## In Brief...

### India Will Plant Dates To Arrest Desert Encroachment

India is planning a massive date cultivation program to arrest the encroachment of the Rajasthan desert, which is slowly but surely swallowing one per cent of the nation's 306 million hectares of land each year, according to a recent study undertaken by the Economic and Scientific Research Foundation.

The march of the desert—although only five-eighths of a mile a year—has wiped out in the course of decades vast tracts of fertile land in Rajasthan, Delhi, Harayana, the Punjab, Uttar Pradesh, Madhya Pradesh, and Gujarat states.

To counteract this, the federal government, with the aid of the UN Development Program (UNDP), intends to plant date palms on a massive scale all along the fringes of the desert. UNDP has approved the five-year plan at a cost of \$190,000. Some 3,500 date suckers from California will be imported for the purpose.

Meanwhile, the Indian Council of Agricultural Research (ICAR) has sanctioned various regional research centers to explore the latest techniques in date production, curing, processing, and packaging. At present India produces few dates and must import many from the Middle East at a cost of \$5.3 million a year.

### U.S. and USSR Differ On Remote Sensing Satellites

The UN Working Group on Remote Sensing Satellites recently held its third session to discuss, among other things, the establishment of an international data collection system. A major point of disagreement was whether or not data collected from earth resource survey satellites should be transmitted to the international community or only with the consent of the "sensed" state. The United

States supported the former view as the only means of achieving a free flow of scientific information; the Soviets took the more limited view on grounds of protecting national sovereignty.

In a related area, the Legal Subcommittee of the UN Committee on the Peaceful Uses of Outer Space, after three years of effort, has reached agreement on the draft of a convention on Registration of Objects Launched into Space.

This treaty, designed to supplement the 1971 liability convention, says that registration, including orbital data, is needed to identify fragments reentering the atmosphere, thus ensuring evidence for the assessment of possible liability for damage.

The main point of contention in the negotiations was the question of markings on space objects, whether such markings should be voluntary or mandatory, and how extensive such markings should be. The draft allows voluntary markings, but calls for special attention to relevant technological developments when the treaty comes up for review in five to ten years. The draft will be submitted for approval to the 29th UN General Assembly, and then opened for signatures and ratifications.

### Cod War Between Iceland And Britain Ends in Compromise

The so-called "Cod War" between Iceland and Great Britain ended last month with a six-month interim agreement which Foreign and Commonwealth Secretary Anthony Crossland described as "a victory for common sense."

The agreement calls for an average of 24 British trawlers—as opposed to the 1975 average of 115 vessels—at any one time to fish within Iceland's unilaterally announced 200-mile limit. Other provisions extended Iceland's exclusive fishing zones from 12 to 20, and 20 to 30 miles, plus new cod conservation measures.

Saying that the agreement was reached within the framework of an

"inexorable world-wide move" towards 200-mile limits, Crossland said that the government plans both to help restructure its fishing industry, and to work within the European Economic Community (EEC) to achieve a revision of the Common Fisheries Policy and try to reach a decision on the EEC's own 200-mile limits.

"Although no final agreement was reached at the last Law of the Sea Conference, the trend towards 200-mile limits is now clearly irreversible. Thirteen countries have already declared such limits, while Canada, the United States, and Norway, among others, have announced their intention to do so," the Secretary said.

### Komodo Dragan in Indonesia Imperiled by Wild Dogs

Indonesia, with one of the richest varieties of wildlife of any country in Southeast Asia, is beginning to pay much more attention to wildlife protection. With the help of the United Nations Development Program, a management plan has been worked out to prevent several species from becoming extinct and to make them into a dollar-earning tourist attraction.

Accordingly, extensive exploration missions to Komodo Island and to reserves in North Sumatra were carried out. Komodo Island is the home of the Komodo dragon (the world's largest lizard) and the two reserves are probably the only areas in the world where the Java rhinoceros has any hope of survival.

Reports from the missions showed that the biggest threats to the survival of the Komodo dragons comes from dogs. These once domesticated but now wild dogs often kill off the wild deer and pigs which are the main prey of the giant lizards. In 1974, about 5,000 Komodo dragons could be found, but the present number has declined appreciably. Fortunately, the Komodo dragon is now legally protected and may not be hunted or disturbed.

The Java tiger, on the other hand,



is believed to have passed "the biological point of no return." There are probably less than a dozen of them in the Meru Betiri nature reserve in East Java, and even these have been reduced to eating porcupine although it is not normally part of their diet.

The fate of the Java rhinoceros appears more favorable. First, because up until now the 50 surviving members live in Ujung Kulon reserve, an area virtually untouched by man. And second, because the Indonesian government, which is considering plans to open this reserve to tourists, intends to maintain it as a fully-protected conservation area.

### South America Uses More Water Than Other Regions

The most contaminated waterways in South America are in Buenos Aires and Sao Paulo, according to experts attending a recent South American conference on Hydric Resources that met in Buenos Aires.

Conference President Herminio Perez, president of Argentina's National Hydric Science and Technology Institute, revealed that South Americans use five times as much water as people in other parts of the world and twelve times more than Europeans. He also announced that the First World Conference on Water, organized by the United Nations, will be held in March of 1977 at Mar del Plata, Argentina.

### Insecticides in Japan Also Killing Beneficial Insects

Environmental groups in Japan are intensifying their campaign against aerial spraying of insecticides. Their spokesmen are using every opportunity to emphasize that not only are such insecticides often dangerous to human health but they also result in the widespread deaths of birds and beneficial insects.

One such concerned group recently released its findings on aerial spraying in a farming community

about 100 miles West of Tokyo. The insecticide "Smition" had been sprayed twice during a two-month period in an attempt to wipe out beetles that endangered pine trees.

The survey disclosed that for every beetle killed, another 1,000 insects—many of them beneficial types—were also destroyed. These included dragonflies, butterflies, spiders, and centipedes. Thousands of wild birds also were killed by the spraying.

According to the survey, these results were fairly typical of other spraying experiments in which widespread destruction is being used as a weapon against a single target. In the instance cited, the survey pointed out, it would have been much more effective to have introduced to the area one of the natural enemies of the beetle.

### Model Rural Energy Center Is Set Up in Sri Lanka

The sun shines brighter, the sky is bluer, and the wind blows with greater intensity than in most other parts of the country at Pattiapola, a village in the Hambantota district in South Sri Lanka, which has been selected by United Nations Environment Programme (UNEP) for the setting up of a model rural energy center that will serve as a demonstration unit for Asia.

Prime Minister Sirima Bandaranaike has approved the launching of this project and the engineering department of Oklahoma State University is carrying out a feasibility study here. Jack Allison, a UNEP consultant here in connection with this work, regards Pattiapola, with its backdrop of steel-blue mountains, the dry zone scenery, the village tank, and the unspoiled people as "one of the most beautiful places on earth."

A unique feature of the rural energy centers (another is planned at Ndia Gorey in Senegal) is the energy-mix concept by which solar energy, wind power, and bio-gas obtained from waste matter will complement each other. It is proposed that energy

from these three renewable sources will be combined in reservoirs to supply the requirements of villages of 200 families for cooking, lighting, and pumping water.

The object of combining these energy sources is that neither the sun nor the wind can produce a continuous supply of energy without supplementation as well as some system of storage. Bio-gas, based largely on the successful Indian process of using animal dung, is the most reliable power source of cooking and lighting. Due to the high cost of providing battery storage for electric power, it is probable that wind energy will prove more useful for pumping water than for generating electricity, while solar energy can best be used for heating water.

Experiments are still in progress to find whether direct sunlight energizing an array of silicon cells, or solar energy operating a heat-exchange "Freon motor," will prove to be the most effective way of generating electricity in a Third World village situation.

### FAO To Establish Permanent Office in Nairobi

The United Nations Food and Agriculture Organization (FAO) will probably establish a permanent office in Nairobi in 1977, according to FAO Director-General, Edwourd Saouma, during his recent roving mission in Kenya.

Africa, the Director-General said, was too large to be serviced by the present regional office situated in Accra, Ghana. He added that he plans to have at least 13 such offices established by next year, and hoped that the proposals would be adopted during the July FAO meeting to be held in Rome.

Kenya's Minister for Agriculture, Jeremiah Nyagah, welcomed the move and disclosed that his government shortly would post a permanent representative to FAO headquarters in Rome to make fuller use of the organization's services.



## Greece Adopts New Measures To Cope With Forest Fires

The Greek government has adopted a series of new measures to cope with forest fires threatening to destroy the country's already limited woodlands. Today, only 19 per cent of the country is covered by forests, whereas 39 per cent was covered 150 years ago.

Undersecretary of Agriculture Kleovoulos Yanoussis announced that a major step in this direction was a law recently passed by parliament stipulating that burned forested areas cannot be used for any purpose other than their immediate reforestation. The law also called for stiffer sentences in case of premeditated arson—considered the major threat to the country's woodlands.

Yanoussis had charged that most of the forest fires occurring in Greece every year are set by real estate speculators exploiting the land for quick profit. Although construction in forested areas is banned, once trees are removed it results in the automatic granting of permits for land sales and construction.

The agriculture official estimated that about 13,000 acres of forest and grazing land were destroyed in 1975, of which 80 per cent burned through deliberate arsons. He added that despite the fact that the total area destroyed last year was almost half that in the preceding year, "We have to intensify our efforts to save the country's already restricted woodlands."

Yanoussis also said that forest-fire fighting squads have been beefed up and provided with more modern equipment in an attempt to stop the destruction.

## Atomic Energy Growth Spurred By Ten-Year Plan in Argentina

Argentina's three-month old military government has unveiled plans to push ahead with atomic energy development. Speaking as new chief of the National Atomic Energy Commission (NAEC), Captain Carlos Castro Madero revealed portions of the new ten-year plan which should lure back home many Argentine nuclear scientists who had left their

country when the former Peronist government failed to adequately fund the NAEC.

The first country in South America to build an atomic reactor, Argentina is counting heavily on atomic power for future energy. At present, only one nuclear plant is in operation, but under the new ten-year plan, a second reactor will be in operation by 1981 and a third by 1985.

Moreover, estimates indicate that Argentina will be producing 670 short tons of uranium annually by 1978 and in the year following will be in position to exploit the large uranium deposits known to exist in the province of Mendoza. These deposits alone will supply sufficient uranium to fuel six atomic reactors of the 600-megawatt class for periods in excess of 20 years. According to the most recent such World Bank study, Argentina could have as many as eleven atomic reactors producing energy by 1990.

Further projects under the 10-year plan call for completion of a heavy water plant by 1984, which will be the first of its kind in South America.

## Calendar...

**July 12-16**—Working Group on Oceanography and Data Exchange. New York. Intergovernmental Oceanographic Commission.

**July 14-16**—Eighth Bicycle/Pedestrian Seminar. Toronto. Sponsored by Metropolitan Association of Urban Designers and Environmental Planners.

**August 2-7**—Second Scientific Conference on Weather Modification. Boulder, Colo. World Meteorological Organization. (WMO).

**August 9-17**—Symposium on Atmospheric Ozone. Dresden. Sponsored by WMO and the International Association for Meteorology and Atmospheric Physics (IAMAP).

**August 19-28**—Symposium on Atmospheric Radiation. Garmisch-Partenkirchen. Sponsored by WMO and IAMAP.

**August 30 - September 3**—Symposium on Problems Related to Solar Energy Utilization. Geneva. Sponsored by the UN Educational, Scientific and Cultural Organization (UNESCO) and WMO.

**September 1-3**—Working Group on the long-Term Effects of Air Pollution on Respiratory Diseases in Children. Katowice, Poland. European Regional Office of WHO.

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27 - October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden. ELMIA Exhibition/Conference Center.

**September 27 - October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27 - October 1**—Committee on Water Problems. Geneva. ECE.

**September 27 - October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.





# World Environment Report

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## GREAT BRITAIN: Top Scientist Fights Nuclear Power Expansion

LONDON—Environmentalists at Britain's recent National Energy Conference received some unexpected support in challenging the need for an expanded nuclear power program. It came from Sir Brian Flowers, chairman of the Royal Commission on Environmental Pollution and one of Britain's most distinguished scientists.

Referring to the Commission's sixth report, to be published shortly, Sir Brian said, "We believe that nobody should rely for something as basic as energy on a product that produces in quantity a by-product as dangerous as plutonium, unless he is absolutely convinced there is no reasonable alternative course of action. I am bound to say that we have not been wholly convinced that this is the case by the evidence submitted to us."

The conference, a novel experiment in open government, was organized by Secretary of State for Energy, Tony Benn, who had invited contributions from industry, trade unions, consumer, and environmental interests.

The conference was opened on a note of optimism by Prime Minister James Callaghan, who spoke of the extensive coal deposits and North Sea oil and gas which would make Britain self-sufficient in energy at least during the 1980s. This, he suggested, would give the government time to formulate a realistic and responsible energy policy to carry forward to the expected energy gap at the turn of the century.

This confidence was reflected by both management and union delegates from all the major power industries. They differed on such topics as the depletion rate for fuel reserves, pricing policy, the role of government, and research priorities. But there was general agreement on the need for conservation to the limits of economy, and on the long-term expansion of both coal and nuclear power. These two types of fuel were seen as "safeguards" to any future energy gap.

Until Sir Brian's speech, the only challenge to this viewpoint had come from Britain's comparatively small environmental lobby, represented here by Friends of the Earth and the Conservation Society. They questioned the assumption that maximum economic growth should be the basis for an energy policy. Nuclear power, they thought, had not been truly costed in terms of energy input, pollution problems, and social risks.

Long term pollution dangers were pin-pointed by Sir Brian, who said, "Plutonium and the higher actinides and

some of the fission products are sufficiently long lived that their production in quantity commits many future generations to safeguard them long after the interest in nuclear power and the skills for coping with it have been abandoned." He therefore felt that nuclear expansion should be left to those generations able to discover a "once and for all" method of disposal.

Sir Brian also expressed deep concern about "the security problems raised by the large scale availability of plutonium in a world of manifest political instability"—a point raised also by John Davoll, director of the Conservation Society, who accused the conference of insularity in its disregard of the world consequences of such a policy.

"By the end of the century, five-sixths of the world population will still be very poor and approaching a state of desperation," he said. "Can we imagine any foreseeable world in which this country pursues its smooth path of increasing affluence surrounded by this? Especially if we have exported to them nuclear reactors that would supply plutonium?"

Secretary Benn summed up the conference as a successful experiment. In such important matters as an energy policy he said he did not think government should proceed by central dictation but rather should try to encourage a sharing of decisions before they were made.

BARBARA MASSAM

## India's Taj Mahal Is Being Damaged By Industrial Air Pollution

AGRA, India—The Taj Mahal, India's world famous marble showpiece, which has withstood the strains of extreme temperatures and frequent earth tremors over the past three centuries, is now showing signs of disinte-

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gration because of air pollution from fast-spreading industrial complexes in the area.

Situated on the banks of the Jumna River, 120 miles south of New Delhi, the "dream in marble" will face an even greater and graver threat when the six-million-ton capacity oil refinery—to be built with Soviet collaboration—becomes fully operational at Mathura, 40 miles up river, in the early 1980s.

Goaded by the Union government, the Uttar Pradesh state government, of which Agra is a part, has undertaken an ambitious multi-million dollar project to beautify the city and preserve the Taj Mahal and other Moguel monuments. The plans call for broadening of the roads, removal of the slums to outskirts of the city, the enlargement of parks, the removal to distant places of the chimneys belching coal dust along the river bank, and the prevention of sewage and other polluted water from flowing into the river.

Since Italy has specialized in research on the effects of sulphur oxide and its derivatives on marble monuments, the Indian government has entered into an agreement with an Italian quasi-governmental firm to make an on-spot study. The Italian experts are already on scene at the Taj site, collecting air samples and pieces of marble and red sandstone from the edifice. These stone samples will be compared with fresh material from the quarries which had supplied the original raw slabs.

In addition, the meteorological department at Nagpur has set up a number of electronic instruments at the Taj site to make an independent air-pollution study. Similarly, the chemical branch of the archeological department at Dehra Dun, 150 miles north of Delhi, has been collecting air samples and studying humidity and temperature every three hours.

These findings, which have been submitted to the government, show that the nearby iron foundries are discharging large amounts of sulphur dioxide, which in turn gets converted into sulphur trioxide on coming into contact with the microscopic iron particles in the atmosphere. And this in turn gets converted into sulphuric acid because of humidity. And finally in the chain, it is the fine particles of this acid that imbed the Taj's marble and cause the damage.

Based on this report, the state government, which will bear part of the cost, has ordered the iron foundries removed to remote areas where the wind direction is away from Agra and the Taj.

Although the government has assured parliament that every precaution will be taken to assure that the Mathura refinery will not further erode the Taj, environmental experts remain adamantly opposed to its construction. They argue that it would be better to site the refinery somewhere amidst the sparsely-inhabited jungles and hills of Central India and nearer the west sea coast to facilitate the flow of crude from the Bombay High and the export of finished products by the sea.

R. SATAKOPAN

## New ILO Work Standards Seek To Improve Environment For Workers

*GENEVA*—The International Labor Organization's annual general conference, held here last month, approved measures to strengthen the impact of the ILO labor standards and decided to begin work on improving plant environment for workers.

ILO standards are Conventions and Recommendations designed to improve working and living conditions, to safeguard human rights such as freedom of association, and to encourage job creation. Employers and workers sit alongside government delegates to work out these model labor laws at the annual conference. Governments are required under the ILO follow-up system to report on their progress in observing ratified Conventions, and this year 55 countries reported a total of 94 improvements as national laws were brought into line with ILO standards.

The 1,450 delegates, advisers, and observers from 123 countries who attended this year's three-week session decided to begin work on new standards for the protection of workers against occupational hazards in the environment. "Most work processes entail the use of products or materials that are likely to release vapors, gases, dust, or fumes that may present health hazards," the ILO noted. "A high noise level is harmful to the hearing and can affect the psychological state of the human being. Vibration and mechanical shock also affect the whole body or parts of it."

The conference focused on atmospheric pollution, noise, and vibration as it evolved standards for protection of the worker against occupational risks. It drew up proposed conclusions for a Convention and a Recommendation for adoption next year after further consultation.

WILLIAM G. MAHONEY

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## SOLAR ENERGY: India's New 'Sun Basket' Cooks Without Fuel

**NEW DELHI**—In a technological breakthrough, India has succeeded in producing a cheap "sun basket" costing only 50 rupees or \$6.70 which can be used in villages for cooking anything from eggs and chicken to rice or cakes without fuel.

Designed by a German scientist, Dr. M. Von Oppen, working at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), in Hyderabad city, the basket is 1.4 meters in diameter with a focal point of about 20 cm from the center.

A plaster of Paris paraboloid holds the bamboo sun basket whose smooth inner surface is carefully lined with silver paper, pasted with glue made by boiling wheat flour and a leafy vegetable called *methi*, with shredded waste paper. Thus a parabolic mirror is formed to reflect the sun's rays to the focal point where the cooking vessel is kept.

Dr. Von Oppen has used the simple basket-like solar cooker for cooking from seven in the morning to four in the afternoon on sunny days. The basket is delicate and needs careful handling. The cook is advised to wear sun glasses to prevent eye damage from the bright reflection inside the basket.

Attempts are now under way to popularize the basket's use in the villages in various parts of the country even before its commercial production can start. Eighty per cent of India's 610 million people live in its 560,000 villages and the government wants to tackle the energy problem from the villages upwards to the cities.

Development of this and other forms of solar energy "at whatever cost" has been given top priority by the Indian government. A committee of the topmost secretaries to the various ministries in the Union Government has been formed to coordinate research in the energy sector. K.C. Pant, Minister for Energy, is the chairman of the committee.

At present there are 25 principal solar research centers in India, besides 12 other Research and Development projects in the field of solar energy. Private industrial firms have joined the ranks of public sector units, like Bharat Electricals and Central Electronics, and universities and institutes of technology in doing basic research to develop solar energy.

The concentration is on solar pumps, solar driers for drying agricultural produce, use of solar energy for desalination of water, and conversion of brackish water into potable water, solar water heaters, use of solar energy for power generation, and development of solar cells for conversion of solar energy directly into electricity.

One of the basic requirements of any solar appliance is the "collector system" to efficiently collect and transmit solar energy. Development of solar pumps for agricultural purposes has been given topmost priority and eight institutions are now working on the development of solar pumps, especially of 5 HP capacity.

Collaboration with the Federal Republic of Germany is being sought to develop a 10 KW solar power station in Madras and to develop 10 KW to 20 KW power units from solar energy in different parts of India, a spokesman of the Energy Ministry told *WER*.

Great interest has been aroused by India's press coverage of the report prepared by two World Bank experts for presentation to the United States National Solar Photo-voltaic Program Review meeting. The report said that solar cells can play a significant role in meeting the demand for small amounts of energy in the developing world.

Charles Weiss, science and technology advisor to the Bank, and Simon Pak, his research assistant, have advanced in a paper on "Developing country applications of photo-voltaic cells" the theory that solar cells could provide power for operating educational television (ETV) receivers and audiovisual equipment in rural schools and rural community centers, refrigerators in rural health dispensaries, and small electric appliances in remote tourist hotels and motels.

The two experts contend the solar cells could be economically competitive with some other sources of power like primary cells, small gasoline generators, and kerosene motors. They also point out that solar cells have certain "intrinsic advantages" like long life, no maintenance, no fuel supply, no noise, and no exhaust.

In India, the government-owned Central Electronics Ltd. is planning to produce solar cells for use in villages, and its director, Dr. U. Venkateswarlu, says the dream of solar cell production is very close to reality. He told *WER* recently that a solar cell capable of producing one watt can be produced for 70 rupees (about \$9).

By 1985, he anticipated three million rural families in India being able to generate their own electricity using solar cells. He said India at present was three years behind the United States in the technology of solar cells but "by the eighties we would be just a year behind the U.S." This subject will figure prominently in the biennial International Solar Energy Conference which India will host in late 1977.

R. SATAKOPAN

## Kuwait To Produce Large Quantities of Desalinated Water From the Sea

**HAWALLI, Kuwait**—An ambitious plan to produce 325 million imperial gallons per day of desalinated and distilled water from the sea has been approved by the Kuwait Government.

Spread over a period of four five-year plans up to 1990, the phased program envisages the production of 18 million gallons per day by 1978, 24 million gallons per day by 1980, 50 million gallons by 1985, and 95 million by 1990—all this in addition to already existing water production. And Kuwait's target for the year 2000 is the



very substantial figure of more than 500 million imperial gallons.

Revealing these projects, Dr. Zaki Abu Eid, Chief Engineer to the Ministry of Electricity and Water, said that the phased programs, besides enabling Kuwait to produce wholesome and healthy drinking water, would increase the export potentiality of the country by increasing the production of by-products, namely table salt, potassium, and other minerals and chemicals.

The announcement of Kuwait's master water plan took place at a desalination technology seminar arranged by the Ministry of Electricity and Water and the Water Resources Development Center, in cooperation with the Japan External Trade Organization and the Kuwait Society of Engineers.

In welcoming the delegates to the seminar, Dr. Eid said that, with the help of technical aid from Japan, most of the Arabian Gulf countries were going to get heavily engaged in producing water from the sea by desalination and distillation methods. He added that Bahrain, United Arab Emirates, Qatar, Oman, and Iran already had made a good headstart on their water projects.

Prominent among the experts present were Dr. Minoru Sayama, Senior Officer for Development Programs, Agency of Industrial Science and Technology, and Mr. Hisao Ogasawara, Senior Engineer, Water Re-Use Promotion Center, Japan. MUSA DAJANY

## Japanese Worry About Spread of New Chemical Pollutant (PCN)

*TOKYO*—A new chemical pollutant, polychlorinated naphthalene (PCN), which closely resembles polychlorinated biphenyl (PCB), is spreading throughout Japan, according to scientists at a Japanese university. The scientists, members of the staff of Akita University, disclosed that a survey conducted across the country revealed the existence of pollution caused by a compound of both PCB and PCN.

Because the survey was preliminary in nature, the scientists explained during a seminar here on environmental science, a more detailed and extensive study will be required to determine just how much PCN has been produced and disseminated, and what its toxicity and accumulation in organic bodies really is.

The scientists believe, however, that PCN is sufficiently dangerous to be included within the Japanese Chemical Substances Examination and Regulation Law of 1973. In addition, they said, the pollutant should be covered by the Environment Agency's annual chemical pollution survey which was started in 1974.

They also pointed out that significant PCN amounts have been discovered in canal bottom mud, in bay waters, and in Japanese rivers. Fish and shellfish also have been tested and found to contain dangerous amounts of PCN.

Elsewhere in Tokyo, the Health and Welfare Ministry announced that mother's milk is still being widely contaminated by PCB and other highly toxic substances.

Despite the fact that strict controls have been enforced, their survey—made last summer but only recently released—revealed that, in addition to PCB, the mother's milk tests disclosed the presence of benzene hexachloride (BHC) and dichloro-diphenyl-trichloroethane (DDT) in all cases. Dieldrin was detected in 76 per cent of the tests.

ALVIN CULLISON

## Northern Haiti Lacks Enough Food To Maintain Minimal Life-Support

*PORT-AU-PRINCE*—Plagued by drought, erosion, archaic and primitive farming methods, the delicate tropical ecosystem of northern Haiti, virtually stripped of its forest cover, can no longer produce food to maintain minimal life-support for its 700,000 inhabitants. Even though many foreign nations, world relief charities, and binational organizations responded one year ago when Haiti declared the region a disaster area and appealed for and received aid, the region may have been irreversibly damaged.

During last year's drought, when the specter of real starvation faced the inhabitants, the United States, the Federal Republic of Germany, Canada, the Netherlands, France, and other nations rushed emergency food shipments in to provide protein. Today, CARE, USAID, World Church Services, and the Catholic Relief Services operate a marginally-efficient "Food for Work" program in which natives and their families receive food allotments in exchange for work programs on dams, roads, farms, and irrigation.

Latest on the scene is the International Bank for Reconstruction and Development (IBRD), which has sent in a team of experts in the fields of economics, agriculture credit, engineer-agronomists, and hydraulic engineers. The IBRD group is seeking to work out a rehabilitation program with projects on agriculture, public health, main and secondary road construction, dams, bridges, irrigation, river flood control systems, and drainage.

Haiti also is currently receiving massive sums of foreign aid and loans which bring the contributions since 1961 to almost a half billion dollars. Presently underway are new roads throughout the Republic, a new deep water pier for the capitol, rural health centers and hospitals, agricultural projects, hydroelectric facilities, and a potable water system for the capitol.

Once the richest overseas colony of France—supplying more food, spices, sugar, coffee, and tobacco to France than even the British Colonies of America supplied England—Haiti has had a gradually diminished output, a runaway population explosion, unconcerned governments, and a destroyed ecosystem, all of which make it today the poorest nation in the western hemisphere with a yearly income estimated at \$80 per capita.

ARTHUR CANDELL



## Controversy Rages In West Australia Over Its Vast Uranium Reserves

PERTH—Australia's Ranger uranium inquiry has moved into its final phase, and has become the focus of the most fiercely contested environmental and political issue in the country. At issue is whether or not this continent's vast uranium reserves should be developed, processed, and exported.

Academics, conservationists, and trade unionists have joined forces to halt mining development of prospects with an *in situ* value of \$50 billion, assuming an average selling price of \$50 per lb. for yellowcake.

Recently, the Australian Conservation Foundation (ACF) acknowledged, before Mr. Justice Fox who heads the inquiry, that the dilemma boiled down to deciding between the competing environmental and economic possibilities of the area which lies on the remote Alligator River in the Northern Territory.

The ACF evidence said that "The Ranger and other uranium deposits in the Alligator River region are all situated on land which has been proposed as permanent reserves for the conservation of nature (which would) ensure the preservation of an important part of the world's natural heritage and a significant flow of direct and indirect benefits to the users, over a long period of time." Mining, the foundation maintained, "cannot be made compatible with the use of land for national park purposes."

Present expectations are that the inquiry's report will be in the government's hands sometime in October. The Prime Minister, Mr. Malcom Fraser, has said there will be no decision on uranium mining until after the hearing is finished.

As the uranium controversy involving land use continued to simmer, other debates were being carried on regarding land use elsewhere in Australia: the Aboriginal "wilderness" and in Tasmania.

Far-reaching legislation to protect Australian Aboriginal land rights has now been introduced in the national Parliament by Mr. Ian Viner, Minister for Aboriginal Affairs in the conservative coalition government.

In espousing his legislation, which he compared with that of new Canadian laws to protect Eskimo rights, the minister underlined the importance of land to the Aborigine: "No matter how stricken a wilderness it may seem to others, his 'country' is to him a Canaan from which his spirit came and where he wants his bones to rest."

In a decision that has provoked angry criticism from mining interests against an admittedly pro-business government, Mr. Viner said: "Mineral exploration and development will only be allowed in Aboriginal land with the consent of the Aborigines. This important provision allows a level of protection hitherto unknown over land held by Aborigines."

Turning to Tasmania—Australia's small southern island state—Dr. Geoff Mosley, head of the ACF, has

suggested that federal legislation be passed to create a state national park to be registered as a World Heritage Area, in the rugged south-west region. This region has been the center of a continuing conservation debate, focused particularly on Lake Pedder, a beautiful wilderness area that has been flooded to widen Tasmania's hydro-electricity generation network. DON LIPSCOMBE

## Chile Takes Strong Stand Against Exploitation of Antarctic

SANTIAGO—A strong environmental stand against the eventual exploitation of natural resources in the Antarctic was expressed by the Chilean delegation to the Antarctic Treaty conference held in Paris late last month. Of the treaty's member countries, Chile, Argentina, Australia, France, New Zealand, and the U.K. have territorial claims on the Antarctic, while Belgium, the U.S., the USSR and South Africa do not.

Thus a conflict has arisen, with the "have not" countries adopting a "free access" policy to the Antarctic and its resources. Opposing this are the countries with claims and bases on the southern ice-cap who say free access is harmful to their interests. In particular, Jorge Berguno, the Chilean chief of delegation, pointed out the possibility of a depletion of resources and said that Chile considered the free-access position a distinct threat to the world's only unpolluted environment.

Because of its being pollution free, the Antarctic could be used as a yardstick for pollution trends in the rest of the world, the Chilean delegate said, and added that before industrial exploration of the iron, coal, copper, natural gas, and oil deposits is allowed an inspection of the flora and fauna should be carried out. Antarctic wildlife includes fish, shellfish, birds, and algae.

As much as it could be argued that the Chilean stand on Antarctic environment is self-serving, it seems to be consistent with mounting public concern over the health hazards caused by pollution in Chilean cities such as Santiago. Riding this environmental wave, Chile's first locally trained ecologist was graduated last April from Austral University in Valdivia, in southern Chile. Rodrigo Cardenas studied at the Institute for Ecology and Evolution, created in 1969, and was recently hired by the National Forestry Corporation to take charge of the park "Torres del Paine," in the southernmost province of Magallanes.

Concern in Santiago over the severe pollution problem the city faces as a result of being surrounded by Andean mountains that lock in industrial smoke and car gases rose to a pitch because of the flu epidemics which killed more than 1,000 people last winter.

An effort by the city government to prevent smog by banning the use of incinerators in downtown buildings failed because there was no place to dump the resulting 60 tons per day of extra waste. Smog indices in Santiago currently surpass the tolerance levels set by the World Health Organization. ALEJANDRO KOFFMAN



## In Brief...

### Titanium Company in Brazil Slapped with Huge Fine

A titanium company in Brazil has been slapped with the biggest pollution fine—\$25,000—ever levied in that country. The fine was ordered by the Port Authority of this north-eastern city of Bahia against the Titanio de Brasil S.A. (Tibras), the only factory producing titanium dioxide in Latin America.

Residue from the factory had been released into the beach north of Bahia off-and-on for several years creating a Brazilian version of the Japanese Minamata scare, but until now authorities had merely warned the company.

Bahian sanitation inspector Antonio Miguel Berges and municipal chemist Jose Pedro Klein charged that the company was dumping so much titanium residue in the form of ferrous sulphate that its content on the beach of Jaua was 3,289 times more than the acceptable level. The international acceptable level was said to be .01 mg/l. and their reading came to 32.8 mg/l. The Bahia sanitation department note on the fine said that aside from creating an undesirable visual pollution on the beach, the ferrous sulphate contaminated or killed the formerly edible shellfish in the area.

### Resin Glue Poisons Bann River In Northern Ireland

A major investigation of the Upper Bann River in Northern Ireland is underway as the result of the river's poisoning by 17 tons of resin glue which fell from a passing lorry and flowed into the river through a large drain.

It was not immediately clear how many fish, especially trout and salmon, would be affected, but a fisheries expert said the glue might have long-term adverse effects by killing the natural food supply.

Elsewhere in Ireland, the government has gone ahead with plans for improving marine research and development. A 70-foot stern trawler will begin operations this summer when it undertakes a charting survey off the east Irish coast for the Geological Survey Office, and then another survey off the west coast for the School of Marine Science, part of University College in Galway. Eventually two more vessels will be added to the marine research fleet, according to the Irish National Science Council.

### Colombia Bans Paint Solvents Of Benzol and Methanol

The Columbia Government has announced its intention to ban the use of all paint solvents based on benzol and methanol as injurious to health. Studies conducted by the Office of Health of the Labor Ministry found that the chemicals are "highly toxic," and urged their prohibition in paint and dye factories.

### Despite Its Oil Reserves Venezuela Needs More Energy

Despite its wealth of petroleum, Venezuelan experts now foresee severe energy shortages. Total power supplied by its giant Guri dam on the Caroni River, some 1,405 megawatts from installation of seven generators during 1975 and 1976, is considered insufficient to meet demands of industrial and urban growth. Guri's third stage, planned for 1981, will up supply to 8,950 megawatts. And according to recent government calculations, by 1985 Venezuela's energy demands will be in the order of nine million kilowatts.

Construction has already started on a 2,000-megawatt thermoelectric plant in Moron on the central coast, to be completed in 1978. The site was chosen for its proximity to the industrial zone of Valencia and to large storage deposits of crude oil.

Unfortunately, the plant will use Bunker No. 6 oil, one of the dirtiest fuels in the world, in an area already contaminated by refineries, docks, cement, and paper factories. No cognizance has been taken of its impact on the marine life of Golfo Triste, at present a very productive fishing area and, more important, a fertile nursery for delicate eggs and larvae which, on being sucked into the plant's cooling system at the rate of 61 cubic m/sec., will be unable to survive the 11°C increase of water temperature.

Even more disturbing to conservationists in this country of 12 million, where no environmental requirements are made on industry, is the news that Venezuela plans a 2,000 megawatt nuclear power plant on Yapascua Bay. Even though its point has a deep-water drop-off more appropriate for a thermoelectric plant than Moron, Yapascua lies on the virtually untouched central coast between the tourist beaches of Patanemo and the "paradise bay" of Turiamo in Pittier National Park. So far no doubts have been raised concerning the safety and efficiency of the proposed Yapascua nuclear station.

### Malta Safeguards Its Beaches From Oil and Other Pollution

The Maltese contribution to World Environment Day on June 5 concentrated on the safeguarding of the beaches and surrounding waters. This was important for the Maltese Islands both in an economic and in an environmental sense, said Minister of Posts and Electricity Daniel Piscopo.

Although Malta's environmental problems are far smaller than those of other countries, the Minister stressed that every effort should be bent to eliminate the pollution of the environment.

The Minister stated that his government had seen to it that no industries were allowed to be set up if these had disposal processes which polluted the waters surrounding the islands. Leg-



isolation, he said, had been introduced to ensure that pollution risks resulting from oil exploration would be diminished by providing immediate countermeasures in case of accidental spills.

One major source of pollution, Piscopo said, was the discharge of oil by tankers plying off Malta. To counter this, he asked for more patrolling of the water by the Maltese armed fleet.

Dr. Piscopo also spoke about the Regional Mediterranean Centre which has set up headquarters at Manoel Island. In reference to pollution of the seas by industrial waste from other countries, he warned; "This must stop before the whole of the Mediterranean is polluted."

Malta is undertaking a series of research projects on pollution in the Mediterranean together with other countries in coordination with the United Nations. These will be carried out this summer at all shores and beaches of Malta and her sister island, Gozo.

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### Environmental Study in Seoul Reveals Severe Air Pollution

Environment Minister Helge Nielsen announced recently in Copenhagen that plans were in hand for a plant to manufacture newsprint from recycled paper.

In a speech at an exhibition, "Environment and Security," he said that such a plant would not only encourage recycling but also save Denmark \$17 million yearly in foreign exchange for imported newsprint. In addition it would create 450 new jobs in a time of high unemployment.

The Minister proposed that the plant should be financed jointly by the state, regional authorities, and private business. "I hope we get a factory going. It will give a good foundation to thinking of recycling," he said. "We must popularize recycling. The population has reacted favorably to the idea of recycling but too few are involved in organized recycling."

Nielsen's plan was not received

uncritically. The business daily "Boersen" commented that Swedish experience had shown that the turnover of a Danish plant would be too small to make it profitable.

The paper also pointed out that newsprint manufacture is a very polluting process in itself. It also raised the question of whether newsprint made from recycled paper would be strong enough for use on high speed rotary presses.

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### Greek Government Moves to Exploit Lignite Deposits

The Greek government is pursuing the full exploitation of the country's huge deposits of lignite (brown coal) in an effort to reduce imports of oil.

Following a special plea by Premier Constantine Caramanlis, a nation-wide search for new deposits has brought to light two layers of lignite of 150 million tons each.

According to the Ministry of Industry, the country's total lignite deposits are estimated at 1.5 billion tons, enough to progressively replace oil and become the sole source of electric energy for the next 40 years. At present, 44 per cent of the country's 16 million kwh electric requirements are produced from lignite, 41 per cent with oil, and the remaining 15 per cent by hydroelectric power.

Constantine Konofagos, Minister of Industry, said that the switch from oil to lignite will save about \$70 for every ton of oil replaced by lignite, which costs \$3.30 per ton. One ton of oil is equivalent to seven tons of lignite. Concurrently with mining lignite, Konofagos added, other sources of power, such as solar energy, will also be sought.

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### Czechoslovakia Passes Bill To Protect Farm Land

The Czechoslovak Federal Assembly has passed a bill that amends and supplements the existing law on protection of agricultural land.

Agriculture Minister Bohuslav Vecera told the Assembly that agricultural acreage had dropped by 9.68 per cent since 1937, that is, by 751,027 hectares. He declared that it would be necessary to increase production by an additional 18 per cent from every hectare to meet the targets of the present five-year plan.

He said that in the last five-year plan the state had spent more than \$2 billion in drainage, irrigation, and land reclamation projects. Reclamation and amelioration projects will be continued in the new five-year plan, he said.

Vecera noted that the new bill bans the use of arable land of the first or second quality for non-agricultural purposes. The ban covers hop fields, vineyards, orchards, and vegetable gardens as well as arable lands in which investments have been made to increase production.

The bill stipulates that agricultural land must not be used for the construction of recreational bungalows or facilities. It calls for fines of up to \$85,000 for the use of arable land for non-agricultural purposes, illicit changes in cultivation programs, and insufficient cultivation.

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### Persian Gulf Found Highly Prone to Oil Pollution

The Persian Gulf, once an ecologist's dream, has turned into a nightmare which threatens marine life and the fishing industry there, according to Iran's Department of Environment Conservation.

The 88,800-square-mile Iranian waterway is polluted with garbage and oil, which comes from routine washing and deballasting of ships, as well as from spills and blowouts.

There have been numerous complaints from ecologists, who fear for the Gulf's marine organisms, and from fishermen, who now derive a substantial living from the Persian waters and whose catch may prove an increasingly important source of food in coming years.

The Department of Environment Conservation is concerned that the



quality of the Gulf waters will deteriorate even further with the growing number of ships calling at Iranian ports and with new industry planned along the coastline.

An "oil polluters' law" is expected to provide prison sentences and fines for those convicted of polluting. Until recently the Department of Environment Conservation has been able to acquire little hard evidence against polluters, but this situation has been improved with the opening last year of a monitoring station at Bandar Abbas. A second station is under construction on the island of Hormuz.

The Persian Gulf, according to expert observers is extremely pollution-prone because of its intense salinity and very high temperatures, which together cause "extreme physiological stress" on marine organisms. While tides which carry pollutants out to sea are fairly strong, a complete turnover of water occurs only every two or three years.

Among the threatened species in the Gulf is the sea cow, the big floppy porpoise-like creature, long on the

Rare and Endangered List. None has been sighted for years and ecologists fear that the species has already succumbed to pollution.

### Children Found More at Risk On Roads in Ireland

A national conference on "Streets for Living," held in Dublin recently, was told that children were considerably more at risk on Irish roads than they were on similar roads in France and Great Britain. The attending engineers, government planners, and environmentalists heard that traffic conditions in residential areas are a major source of alarm and concern to communities throughout the Irish Republic.

Organized by the semi-official body for physical planning, An Foras Forbartha, the conference heard that maximum speed limits of 30 miles per hour were largely ignored in housing estates and that each of the 87 local government planning authorities had adopted their own individual standards for roads in housing areas—leading to

considerable variations.

A Dublin architect and leading environmental campaigner, Councillor Ruairi Quinn, who is a member of the capitol city's local government body (Dublin Corporation) told the conference that Ireland did not have meaningful "streets for living" within its residential areas. It was, he said, a major problem for urban development and urgently in need of solution.

The Minister for Local Government, James Tully, who is ultimately responsible for planning, promised the conference that prime consideration would be given to what the community itself wanted rather than the kind of living conditions that the planner or designer wished to impose on the residents.

But many Irish community associations and residents attending the conference were not impressed by the Minister's words. They maintained that what was needed was action, rather than words, that would put a halt to the already-programmed plans to allow high-trafficked routes through residential areas.

## Calendar...

**August 19-28**—Symposium on Atmospheric Radiation. Garmisch-Partenkirchen. Sponsored by WMO and IAMAP.

**August 30 - September 3**—Symposium on Problems Related to Solar Energy Utilization. Geneva. Sponsored by the UN Educational, Scientific and Cultural Organization (UNESCO) and WMO.

**September 1-3**—Working Group on the long-Term Effects of Air Pollution on Respiratory Diseases in Children. Katowice, Poland. European Regional Office of WHO.

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27 - October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden. ELMIA Exhibition/Conference Center.

**September 27 - October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27 - October 1**—Committee on Water Problems. Geneva. ECE.

**September 27 - October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 17-22**—8th International Conference of the International Association on Water Pollution Research. Sydney, Australia.





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## Singapore Permit Program Cuts Business District Traffic

**SINGAPORE**—The number of passenger cars entering the central business district of this city state during the morning rush hour has been cut 76.6 per cent since the government instituted an "Area License Scheme" to reduce traffic congestion.

Under the new system, which went into effect June 1, all passenger cars must have a special license to enter the 620-hectare central area, which has been designated a Restricted Zone (RZ), between 7:30 and 9:30 am, if they are carrying fewer than four passengers. The licenses cost \$24 on a monthly basis, or \$1.20 on a daily basis.

To back up the system, motorists who insist on entering the RZ with less than four passengers or without the special license face a minimum \$20 fine if caught by the police at any one of 27 checkpoints surrounding the RZ.

At the same time, the government has built 16 car parks at the fringe of the RZ where motorists can leave their cars for the day and catch a special city shuttle bus into the central business district.

Within the RZ, however, fees in the government car parks have been raised (in many cases doubled), and in several "restricted car parks" motorists will be required to pay a \$4 surcharge if they park for more than two hours.

To encourage motorists to form car pools and thereby avoid the need for an entry license, the government established a Car Pool Management Unit, which has a computer to match the needs of applicants.

So far, the new system has been a definite success. Not only has the number of passenger cars dropped by 76.6 per cent, but the number of other types of vehicles entering the RZ during the morning rush has also dropped by 23.5 per cent. The over-all reduction in peak hour traffic is 35.2 per cent, from an average of 55,000 vehicles in March to 36,000 today.

Previous attempts to reduce the bumper-to-bumper traffic that has been a feature of the morning rush hour here had been unsuccessful. Exhortations by government leaders for motorists to leave their cars at home and take public transportation to work instead fell on deaf ears, partly because of poor bus service. The government finally had to step in by seconding officers

to the privately owned Singapore Bus Services Ltd to reorganize and improve service.

But the Singaporean motorist still seemed to prefer frustrations of traffic jams until the government added the financial disincentive as well. PANG CHENG LIAN

## First Steps Are Taken To Start Up UN Housing Foundation

**NEW YORK**—Work is now underway in earnest to set in motion the United Nations Habitat and Human Settlements Foundation, whose establishment was authorized by a resolution in last year's General Assembly.

The first such foundation in the UN system, the habitat agency will be semi-autonomous within the UN Environment Programme. It will have its own administrator (not yet designated) but UNEP's executive director, Maurice Strong, and UNEP's Governing Council are responsible for the Foundation's operation.

Bernard Zagorin, an American economist with long experience in international agencies and the US foreign service, has just transferred to UNEP's Nairobi Headquarters as a special advisor to help get the Foundation underway. Zagorin retired from US government service last year, as Ambassador to the UN's Economic and Social Council (ECOSOC).

Zagorin drafted the plan and program for the Foundation which was approved by UNEP's Governing Council in April.

Before leaving, Zagorin told *World Environment Report* in an interview that his first tasks will be putting together a staff, establishing programs and operating procedures, and seeking financing for the Foundation. A permanent location has not yet been designated, but

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the Foundation will operate out of Nairobi pending a decision.

Purpose of the Foundation, according to the UN resolution, is to "assist in strengthening national environmental programmes relating to human settlements, particularly in the developing countries, through the provision of seed capital and the extension of the necessary technical and financial assistance to permit an effective mobilization of domestic resources for human habitat and environmental design and improvement of human settlements..."

This is to be done by "stimulating innovative approaches to pre-investment, pre-project and financing strategies...organizing technical assistance services...promoting the adaptation and transfer of appropriate scientific and technical knowledge..."

Zagorin expects the staff for the initial two-year phase to be about 20 professionals, with some of the senior staff not chosen until after the administrator has been appointed. A blending of interdisciplinary skills will be sought, including economists, urban planners, architects, regional planners, geographers and environmental experts, as well as administrators and managers.

The function of the staff will be to visit countries to evaluate potential programs and then get other agencies or professionals to carry the projects out.

The financial resources of the Foundation are not yet established, but \$4 million has been allocated from the UN Environment Fund to see it through its first four years, after which it is expected to operate entirely on voluntary contributions from the UN member countries, and from non-governmental sources.

Zagorin told *World Environment Report* he expects the need for UNEP funds to peak after about two years and that then the voluntary portion will take over.

It is important, Zagorin believes, for the Foundation to concentrate at first on a few well-selected projects and to do them successfully.

These projects should be innovative and useful, and they should be placed in countries that show a major commitment to the concept of human settlements. They do not have to be urban projects or in large countries, he adds, and one or two ought to be rural or semi-nomad in nature.

It is not important for these early projects to involve a great deal of money, but if the Foundation can establish its merit the contributions in later years will be large enough to support a significant program.

Zagorin sees the Foundation introducing a new element of confidence into an area that is now overlooked in international programs—how best to mobilize the social, technical and financial resources of a country to provide adequate housing and services for low-income groups. Much attention has been paid to building techniques and the like, he notes, but the mobilization of the total resources required has been ignored.

The work of the Foundation should be complementary to agencies such as the World Bank, Zagorin believes. The bank does not provide technical assistance, he

points out, nor does it pay attention to the total needs of a human settlement. The Foundation's role would be to identify these needs—water supply, sewerage, access roads, etc.—and feed the proposals into the World Bank or other suitable funding agency.

The Foundation has no official link to UNEP's conference in Vancouver next year—Habitat 76—but Zagorin expects the conference to have much useful fallout for the Foundation.

For one thing, the conference will focus international attention on the subject of human settlements. But even more important, he believes, is the fact that many countries are assembling teams and task forces of governmental, academic and architectural experts in preparation of Habitat 76 that could be a valuable and catalytic force in achieving the Foundation's goals after the conference is over.

JRM

## Social Concern Urged For Habitat

GENEVA—Social considerations should guide discussions at Habitat, the world conference on Human settlements scheduled to be held in Vancouver in June 1976.

This was the conclusion reached at a preparatory conference called here this month by the Economic Commission for Europe (ECE) and attended by delegates from 24 European and North American nations. Habitat is being organized by the UN Environment Programme (UNEP).

The delegates agreed that human settlement policies require a more equitable distribution of resources. National settlement policies must be integrated with national social and economic goals, and a broad, rather than a sectoral approach should be taken.

The Vancouver conference should concentrate on problems of the developing world, the delegates agreed, and should focus on such questions as clean water, schools and health care.

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## Energy: Japan's "Project Sunshine" Seeks Alternate Sources

**TOKYO**—For more than a year the Japanese government has been pursuing a major effort to develop new, more dependable and cleaner forms of energy. Called "Project Sunshine," the program is directed by the Institute of Industrial Technology, an arm of the Ministry of International Trade and Industry (MITI).

Total cost of the program is expected to exceed \$3.4 billion by the end of the century, which is the target date for extracting a significant amount—up to 20 per cent—of Japan's energy needs from such unconventional sources as solar heat, geothermal energy, synthetic natural gas and hydrogen.

Project Sunshine calls for both basic research and large-scale demonstration plants which it is hoped will greatly increase Japan's self sufficiency in energy. MITI executives compare the program to the US space program.

However, those in charge face many budgetary and technological hurdles. For example, for the current fiscal year (April 1, 1975 to March 31, 1976), the program was allocated only \$12.3 million in the national budget, a steep slash from the \$56.9 million requested by MITI. This cutback will delay many aspects of the program.

Nevertheless, the program's directors have set up a number of goals for the next 15 years:

**Solar Energy**—By the early 1980s it is hoped to have operating a solar energy plant capable of producing 300,000 kw of electricity for heating homes and public buildings.

This output would be raised to 2 million or more kilowatts by the year 2000.

**Geothermal Power**—Although private electric power companies are already operating geothermal plants in Japan, producing a total of 45,000 kw, MITI hopes to raise this to at least 7 million kw by 1985. This would include private commercial efforts and a state-owned plant producing about 50,000 kw.

Another state-owned facility producing 300,000 kw is envisioned for 1990. By the year 2000, it is hoped Japan will have developed 48 million kw of geothermal power.

**Coal Gasification**—The program also calls for coal gasification and liquefaction into low-sulphur gas and liquid fuels. Present targets call for development of conversion furnaces capable of producing 7,000 cubic meters of gas daily by 1979, 50,000 cubic meters per day by 1982 and as much as one million cubic meters per day by 1990.

As for liquid fuels, the MITI goal is a daily production from coal of 10,000 barrels by 1990. This would be tripled by 2000.

**Hydrogen**—MITI technicians feel this area of development will be the most difficult. They are hopeful they can greatly reduce the costs of separating hydrogen from water, presumably through technological breakthrough. One of the most likely avenues to success, the Japanese believe, will be hydrogen-consuming fuel cells.

It is still too early in the project to claim any major technological breakthroughs, although the success of much of the program will depend on development of entirely new technology. In solar energy, for example, the Japanese are working on ways to construct more efficient and cheaper solar collectors.

Direct conversion of solar energy into electricity is not yet economically feasible, although the Japanese are using this approach to heat some private homes and to operate unmanned lighthouses. This area is receiving intense attention.

The Japanese outlook for geothermal energy is more optimistic, although some scientists consider MITI's goals to be unrealistic in terms of time. But other scientists disagree, pointing out that commercial power companies will be attracted to the program by the prospect of profits.

The cost of electric power generated by geothermal energy is slightly lower in Japan than that produced from fossil fuels, and the plants are considered more reliable. The average geothermal electric power station in Japan is in operation 94 per cent of the year, twice the rate of fossil fuel plants and three times the average hydroelectric station.

**Volcanoes**—The Japanese are looking into the prospects for developing power from volcanoes. There are 60 active and dormant volcanoes throughout the country, most of which could yield considerable energy if the MITI scientists can devise ways to recover it for electric power generation. It is estimated that from 2 million to 4 million kw of electricity could be obtained from volcanoes by 1985 and much more by 2000.

Although much of the work envisioned in Project Sunshine will be carried out by MITI itself, it is expected the government will also grant subsidies to private research organizations and industrial companies to speed up the program. Such funds may be included in the next fiscal year's budget. If so, it is likely similar funds will be voted each year over the next quarter century.

A.E. CULLISON



## Biological Control Program Tames Sri Lanka's Coconut Beetle

**COLOMBO, Sri Lanka**—This island nation is one more able to take advantage of the booming prices in the international coconut market thanks to a highly successful biological control program that stopped the advance of a pest threatening to wipe out the country's coconut trees.

The tiny red palm weevil, *prometheca cumingi*, was first reported to Sri Lanka's Coconut Research Institute in October of 1970. The infestation, at first concentrated in the southern suburbs of Colombo, had radiated within one year to distances of 15 to 20 miles all around the city.

Infected palms were quickly reduced to mere apparitions as their fronds were devoured by hordes of the beetles and the coconut crop was seriously threatened with over 15,000 acres infested. Although the beetle is a weak flier it was able to spread quickly along Sri Lanka's palm-fringed roads and railway lines by hitching rides on buses and trains.

The Coconut Research Institute reported that the pest was spreading outward from its main area into isolated pockets along the main road and rail routes.

At first, near-panic set in and all manner of cures ranging from DDT to soap solutions were advocated. Government authorities first advised owners of infected palms to lop off their branches and burn them. DDT spray was also advised, but reluctantly.

It was found, however, that chopping off branches merely shook off the *cumingi* which then settled on uninfected trees. In the process, more damage was done to the palms than the beetle would have done on its own.

DDT was used outside the periphery of the main infected area and on the outlying pockets to create a *cordon sanitaire*. Meanwhile, a biological control laboratory was established where species of parasites that feed on the larvae and pupae of the beetle were imported, bred and liberated.

Two parasites used extensively in the program were *pediobius parvulus* and *dimmockia javanica*. The former had given spectacular control of the *cumingi* in Fiji in 1937 and later in Papua. The latter, although known as a parasite in a number of countries, was not considered an excellent control.

However, in Sri Lanka, *dimmockia* established and multiplied rapidly, giving good control of the beetle, while *pediobius* did not establish despite over 300,000 specimens being released.

By the beginning of 1973, the coconut beetle was considered under control in Sri Lanka. Use of the biological control method not only avoided lasting damage to the country's eco-system, but it was also inestimably cheaper than the alternative chemical control method.

MANIK DE SILVA

## Pakistan's Housing Needs Critical

**ISLAMBAD, Pakistan**—This country will have to provide more than 300,000 additional housing units every year to meet the population growth in 1975-1980. The present population of 70 million is expected to increase by 11 million during that period.

According to Rafi Raza, Pakistan's minister for production, industries and town planning, the housing problem is worst in rural areas. Only five per cent of the rural population has access to a protected piped water supply, he told a symposium here on "Human Environment," while sewerage and drainage facilities are virtually non-existent.

According to 1974-75 estimates, Raza said, six million out of eight million rural households are in "pucca" (brick), "semi-pucca" (brick and mud) or serviceable "katcha" (mud) houses, while the remaining two million are in substandard, dilapidated units.

The Pakistan government, with the provincial governments and private builders, is trying to develop a housing policy to deal with the shortage. But the country's resources are limited in terms of both skilled manpower and funds, Raza said, and the scale of the problem is unimaginably great.

"On one end of the scale," he said, "the problem of water logging, salinity and land erosion are rendering vast areas unsuitable for food production. And when unemployment drives the population into the cities we find at the other end the majority of our urban population is living in overcrowded slums, subjected to substandard conditions and various forms of social ills."

## Lead Survey Set for Ireland

**GALWAY, Ireland**—Ireland has been selected as the location for a study on the effects of lead pollution sponsored by the European Common Market (EEC).

The study, which is expected to take at least a year, will be mainly concerned with the effects on the general public of exposure to lead and it will be devised to test the EEC's new guidelines on biological sampling. Several hundred people are expected to take part.

The lead study is to be jointly sponsored by the EEC's Health Protection Directorate and Ireland's Western Regional Health Board.

The test was announced at a seminar on biological standards for lead held here, which also discussed the results of a survey already conducted on lead levels in the blood of people living in the west of Ireland. The survey showed a generally low lead level, even among people living near Tynagh, County Galway, where lead is mined. Residents of islands off the west coast, where there is no mining and no industrial development of any sort, were found to have a similar lead level to villagers in Tynagh, according to Dr. Helen Grimes of Galway Regional Hospital who conducted the survey.



## Special Report: Mexico City Battles Host of Environment Problems

**MEXICO CITY**—This city's once-proud boast of having the cleanest air of any world capital has gone up in a cloud of acrid yellow smoke. Its lovely landscaped boulevards are packed with traffic from early morning to late at night, while palms along the parkways wither and die.

"The automobile is the Number One Enemy of sane and healthy development of Mexico City," according to urban planner and engineer Bernardo Quintana. There are now more than one million vehicles registered in the city, and the number is growing by 12 per cent every year.

But cars aren't the only problem. With ten million persons—one sixth of the nation's population crowded into the metropolitan area and more arriving every day, the Mexican government, which administers the city as a federal district, is battling environmental problems on several fronts, some of them with success.

In several respects the city's location works against a healthy environment. It lies at 2,240 meters altitude in a natural bowl formed by dry lake beds between two mountain ranges just 19 degrees above the equator. The mountains tend to trap the polluted air over the populated area and the strong sunlight creates photochemical smog. The city is the largest in the world without access to a sea or major river. Hence water supply is a problem.

Parts of the city routinely suffer a water shortage during the dry season. The dry bed of Lake Texcoco on the east is a dust bowl and sometimes is wind-whipped into zero-visibility storms that sweep the city.

Because the center of the city is built on a drained lake bed, sub soil is insecure, and there have been problems with the drainage system. In rainy season, low-lying neighborhoods have been flooded.

**Drainage**—A new deep drainage system running for 68 km has just been completed after eight years of work and a cost of \$432 million. It replaces an ancient canal that will be paved and turned into a highway. The new system has a capacity of 200 cubic meters per second, uses 50 km of 6.5-meter pipe, with the balance being 5-meter, and is expected to carry all surface water, even from heavy cloudbursts.

Temperatures in Mexico City are moderate most of the year, and, with virtually no freezing weather, the pest and insect population thrives.

The government became alarmed over the city's air pollution in 1971 and passed control laws that for the most part are being enforced.

Vehicles may not emit visible exhaust for more than 10 seconds. If they do, they can be impounded

by traffic police and reclaimed only after adjustments have been made.

**Tax Breaks**—Polluting industries that do not have a cleanup program are fined and may be shut down. Tax and duty breaks are offered to firms importing control equipment.

The federal sub-secretary in charge of the atmosphere, Francisco Vizcaino Murray, says his agents have visited 42,000 of the 70,000 "high contamination" industries in the country, and, he claims, all but one have been cooperative.

In May of this year, 20 new mobile and fixed air pollution monitors were installed in Mexico City at a cost of \$3.5 million, according to Vizcaino, who adds that the government has spent more than \$1.2 billion on environmental programs since the end of 1970. The figure is expected to reach \$2 billion by the end of this year.

Mexico City consumes half of all the gasoline, diesel fuel and electrical energy used in the country. Every day, more than 14 million person-trips are made in the city, all but 16 per cent via internal combustion vehicle. The remainder are via streetcar, trolley bus and subway. The subway is being extended to remove more surface traffic from the streets.

**Commuters**—In 1960, only 5 million lived in the capital and only 20,000 lived in its suburbs. Today 2.5 million are suburbanites, and half of them are commuters.

To combat this trend, the government is considering building housing developments in industrial areas. Elimination of packed crate "shanty towns" is a goal of President Luis Echeverria under whose direction large low-cost housing projects are being built on the city's edges.

Noise pollution is now being attacked, with a new maximum level of 65 decibels for cars and noisy establishments. The old allowable level was 120 decibels. To counteract visual pollution, large billboards on major expressways and streets were removed on federal orders.

One loss in the name of progress has been the destruction or remodelling of all but 300 of the 5,000 Spanish Colonial structures that once graced the heart of the city. This destruction was carried out despite landmark preservation laws.

But Mexico City's hundreds of neighborhood parks and plazas remained, with the 1,000-acre Chapultepec Park providing a spacious grassy recreation area for a population that is growing at 3.5 per cent per year.

KATHERINE HATCH



## Briefs . . .

### UNEP Builds Temporary Offices

UNEP Headquarters in Nairobi will move into a temporary office complex now under construction near the site of its specially designed permanent home which is to be built in Gigiri just outside Nairobi on land donated by the Kenyan government.

The agency has outgrown its space in the Kenyatta Conference Center in Nairobi and plans are to move into the temporary buildings early in 1976. The temporary complex will consist of eight office blocks, each providing space for about 50 people, and a service block with a cafeteria, stores and a print shop. The complex will cost about \$2 million and is being built by local firms.

A study of the environmental requirements for the permanent building has been completed by Mutiso Menezes International, architectural consultants, but more detailed design work has not begun and completion is not expected before 1981 or 1982.

### Industrial Waste Recycling Encouraged in Ireland

State agencies in the Republic of Ireland are studying projects for recycling industrial wastes. The state-backed Industrial Development Authority (IDA), responsible for encouraging new industry, has announced it will provide financial support for such recycling industries as the conversion of waste glass into glass fiber and the reclamation of metals from junked cars.

The IDA has also agreed to sponsor an Industry Recycling Programme due to be launched this month by the "Keep Ireland Beautiful Movement" (KIB). Aim of the campaign is to stimulate interest by Irish industry in recycling projects as it makes plans for post-recession expansion. Applications to IDA

under its research and development program have doubled this year compared with 1974, indicating renewed interest in development.

IDA and KIB have been working with University College in Dublin and with *An Foras Forbartha*—the state-backed planning and research institute—to identify the range of technical possibilities that may be suitable for Irish investment. The results are expected to be published this month.

### Hong Kong Drafts Noise Controls

The government of Hong Kong is drafting legislation that would ban use of noisy construction equipment—concrete vibrators, pneumatic drills, air compressors and concrete mixers—from 8 p.m. to 6 a.m. every weekday and throughout public holidays and Sundays. Such a ban is already in force against pile drivers.

The legislation will be in the form of amendments to the Summary Offences Ordinance, according to Alan Armstrong-Wright, the British colony's deputy secretary for environment. At the same time, amendments are being sought to the Public Health and Urban Services Ordinance that will clamp down on noisy air conditioners.

### Pakistan Looks at Wildlife Protection

The government of Pakistan is considering a number of possibilities for protecting the country's wildlife after a meeting last month of the National Wildlife Council which was attended by a representative of the World Wildlife Fund.

The government will encourage private landowners to establish reserves and will ask the provincial legislative assemblies to recommend areas meeting international standards for national parks.

The government will also investigate scientific management of wildlife, establishment of a central wild-

life conservation board, training of personnel and a public relations program aimed at obtaining public support and participation in wildlife conservation.

The government is also considering proposals to ban big game hunting throughout Pakistan.

### UNEP Headquarters Task Force

A Kenya Projects Task Force has been formed to strengthen relations between UNEP headquarters in Nairobi and the Kenya government and to propose new projects to be undertaken in Kenya itself.

The new body is already holding discussions with the Kenyan Ministry of Finance and Planning, the Foreign Ministry and the Environment Secretariat, as well as representatives of other ministries that may be involved in specific projects.

The idea is that UNEP and the Kenyan government should cooperate on a series of model projects that will not only produce locally useful results, but will also generate experience of value to other developing countries.

### Coastal Protection Campaign Starts in France

The Foundation of France, the country's most highly respected financial grouping, has announced that it will support a nationwide drive to protect France's coastline.

As a first step, the Foundation will sponsor a photo contest running through the end of October for the best documentation of successes and failures in coastal development, or drawing attention to the remaining "virgin beaches."

The Ministry for the Quality of Life and the Territorial Development Section will participate in promoting the contest.

The Foundation of France was established in 1969 by 16 of the biggest French financial firms, led by the Caisse des Depots.



### Paris Looks at Recovery Plan For Its Solid Wastes

The City of Paris is expected to decide this month in favor of constructing a plant to recover and recycle materials from its daily collection of garbage and solid wastes.

The plant would recover from 90 to 97 per cent of metal, glass and plastic products. Plans call for some of the recovered materials to be used in building foundations and in road construction. A coalition of French industrial groups has been carrying on a pilot project to develop a waste separation and distribution plant.

### China Adds Millions of Acres To Irrigated Land

According to the New China News Agency, the People's Republic of China during the just completed winter-spring slack farming season added 6.64 million acres of new and improved irrigated land, 12.6 million acres of newly levelled land and 23.2 million acres of deep-plowed land to its agricultural resources.

These additions involved more than 10 billion cubic meters of earth and stone work, up substantially over the work carried out during the same period of last year, the agency reports.

### High-Quality Paper Made From Computer Recycle

A Danish factory has devised a method for recycling used computer printout paper to manufacture high-quality writing paper.

C. Terkildsen of the Maglemølle Papirfabrik plant said the computer printouts can be used because they are lightly colored and inked. Therefore they do not require de-inking or rinsing. The resulting product is a little blue, he noted, but the color is scarcely noticeable.

The plant has produced from 10

to 15 tons of the recycled paper as a test. Samples distributed to potential customers have been well received, and if enough interest develops, production will be resumed.

There is no cost saving so far because of the labor required to sort the computer paper, and the experiment is regarded as a contribution toward conserving timber reserves.

### First Cars Certified To Meet Japan's '76 Standards

Japan's Transport Ministry has certified six new models, all produced by Toyo Kogyo, as being the first group of automobiles meeting the country's provisional 1976 emission control standards. The Ministry is expected to begin enforcing the new standards in April of next year as a milder stopgap substitute for the original stronger 1976 standards. The government relaxed its nitrogen oxide standards and delayed enforcement for two years.

The provisional 1976 standards for nitrogen oxides, hydrocarbons and carbon monoxide are, respectively, 0.6, 0.25 and 2.1 grams per kilometer for cars weighing one ton or less, including the weight of two people. For heavier vehicles, the nitrogen oxide standard is relaxed to 0.85 gram.

### UNEP Helps With Tanzania's New Capital

The government of Tanzania has asked the United Nations Environment Programme (UNEP) to assist with the country's plans for moving its capital city from Dar es-Salaam on the coast to a more central position at Dodoma.

UNEP will fund a small number of experts from such disciplines as anthropology, urban planning and architecture.

Preliminary design is underway by a special Capital Development Authority, created by the government, with the help of hired consult-

ants. The government has also asked for assistance from the UN Development Program (UNDP), and it is expected UNEP will brief UNDP project officers on environment considerations as they are appointed.

These considerations include use of appropriate local materials and traditional designs, attention to local cultural values, flexibility in design, use of such energy sources as solar and wind power, the need for participation in the design by Tanzanians, the need for realistic building codes and the application of arid-land landscaping methods.

### New Zealand Protects Whales

The New Zealand government will announce shortly measures to prevent exploitation of whales.

Prime Minister William Rowling said the government's concern over depletion of the world's whale stocks led to the development of legislation late last year that would restrict importation of whale products and would protect all sea mammals, including whales, within New Zealand waters.

Despite problems in detecting some whale byproducts, such as perfumes containing ambergris, the government will now proceed with this legislation, Rowling announced. New Zealand's most effective contribution to whale conservation, he said, would be the example the proposed legislation sets for other countries.

### Environmental Education Program for Asia

Four international oil companies—Exxon, Caltex, Amoco and Summit—are supporting a postgraduate diploma program in environmental technology and management offered by the environmental engineering division of the Asian Institute of Technology in Bangkok. Three employees of Pertamina, the Indonesian state oil company, one



staff member of the Mara Institute in Malaysia and one Rotary International scholar from the US have already graduated from the program.

Currently enrolled are two Exxon (still called Esso in Asia) employees from Thailand and Singapore and one staff member from the Indonesian Ministry of Public Works. Esso Thailand is sponsoring a research project at the institute on the use of natural absorbent materials, such as coconut husks and rice straws, for cleaning up oil spills. The experiments are being conducted in a wave basin, and the results will be tested under actual spill conditions in coastal areas of Thailand.

### Education Cures Littering

Ingrained antisocial littering habits can be cured through educational programs, particularly those

aimed at children. This is the conclusion reached from a two-year research project sponsored by the Keep Britain Tidy Group and Brighton Polytechnic. Learning materials were tested by Cherry Mares, a Brighton research fellow, in 36 classes of 1,103 primary schoolchildren aged 9 to 11.

The learning materials consisted of a film, slides, assignment cards and a folder of information. Half the classes used the learning materials, while half served as a "control" group. The tests gave clear evidence, according to a report on the project, that the children using the materials were more aware and knowledgeable about litter than the control group.

Next step in the program should be to improve the learning materials and adapt them for use by different age groups, but more funds will have to be found before this can be done. Copies of the report are available from Keep Britain Tidy Group, Bostel House, 37 West Street,

Brighton BN1 2 RE, United Kingdom. Price in the UK is one pound, seventy-five pence.

### Colombia Ecological Stations

The Colombian government has inaugurated the first of 11 "ecological stations" at Popayan in southwestern Colombia. The stations will cost a total of \$3 million, half of which is to be funded from foreign loans, and will be located throughout the country.

The stations will provide peasants with a variety of agriculture services with an emphasis on environmental protection. In Popayan, for example, the station includes fish and vegetable nurseries and laboratory facilities for soil and water analysis.

Each station will be equipped to train a newly created volunteer corps of environmental inspectors. The first group, covering Cauca Department (state) received their diplomas during the inauguration.

## Calendar . . .

**August 1-11**—International working meeting on Teacher Training in Environmental Education and Conservation, Caerleon, U.K., sponsored by International Union for Conservation of Nature and Natural Resources.

**August 11-15**—Third General Assembly, Scientific Committee on Problems of the Environment (SCOPE), Vancouver, sponsored by International Council of Scientific Unions, 51 Boulevard de Montmorency, 75016 Paris.

**August 18-20**—Specialized Conference on Nitrogen as a Water Pollutant, Copenhagen, sponsored by International Association on Water Pollution Research.

**August 18-23**—Symposium on Long-term Climatic Fluctuations, Norwich, U.K., sponsored by World Health Organization, International Association of Meteorology and Atmospheric Physics.

**August 24-29**—Preparatory Committee, Conference on Human Settlements: Habitat, New York, sponsored by UNEP.

**August 24-6 September**—Symposium on Methods of Chemical Investigation of Natural Waters sponsored by International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

**August 26**—Symposium on the Large Scale Modification of Fresh Water Systems and Their Effects on Oceanic Environment, Grenoble, sponsored by International Association for the Physical Sciences of the Ocean; International Association

of Meteorology and Atmospheric Physics; and International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

**September**—Workshop in Population Resources and Environment in West Africa, Senegal, sponsored by Council for the Development of Economic and Social Research in Africa.

**September 1-6**—Seminar on Collection, Disposal, Treatment and Recycling of Solid Waste, sponsored by Economic Commission of Europe, Geneva.

**September 2-4**—Committee on Water Problems. Geneva, sponsored by Economic Commission on Europe.

**September 7-19**—Twelfth General Assembly and Thirteenth Technical Meeting, Kinshasa, Zaire, International Union for Conservation of Nature.

**September 14-19**—International Conference on Environmental Sensing and Assessment, Las Vegas, sponsored by the University of Nevada, US Environmental Protection Agency, World Health Organization and others. Contact Office of Public Affairs, National Environmental Research Center, US EPA, P.O. Box 15027, Las Vegas.

**September 22-26**—Symposium on Forest and Wood, Interlaken, Switzerland, sponsored by the Economic Commission for Europe (ECE) and the Food and Agriculture Organization (FAO).





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## Waste Wood Residues Are Called Valuable Source of Raw Materials

*GENEVA*—The United Nations Economic Commission for Europe (ECE) is predicting that use of residues in the timber industry will grow and is therefore weighing what the likely environmental impact will be.

A report on this problem was considered at an ECE symposium in Hyvinkaa, Finland, in mid-June, and will be discussed again at a second Symposium on Extending the Use of Wood Residues to be held in Bucharest later this year, probably toward the end of September.

The report notes that at every stage in the conversion of standing timber into finished wood-based products, bits and pieces are left behind. Stumps, roots, and branches are still left to rot in the forest while other residues, such as bark sawdust, offcuts, and shavings have only fairly recently become an important source of raw material for the making of pulp, particle board, and fiberboard.

Predicting a growth in demand for such residues, the report cites the energy and chemical industries as prime contenders for these former waste residues.

ECE projections to the turn of the century suggest that there may be difficulties in matching the demand for paper and paperboard, particle board, fiberboard and dissolving pulp with supplies of their raw materials. An increase in the wood residue element in these raw materials may be one overlooked way of bringing supply and demand into balance, the ECE report said.

Among the uses for wood residues, the ECE listed bedding and feedstuffs for animals, soil conditioners, packing materials, and raw material for the wood chemical industry.

It has been estimated that in 1970 about 135 million cubic meters of forest residues could, in theory, have been put to use. To these should be added 42 million cubic meters of bark and 75 million cubic meters of residues from saw-milling and secondary processing industries.

Although little is yet known about the environmental disadvantages of harvesting the entire tree, the report points out that the resulting loss in soil nutrients is bound to be high, thus leading to a need for replacement by artificial fertilizers. Removal of stumps is also said to lower the nutritional level of the soil and cause erosion problems, particularly upon steep slopes.

The ECE cautioned, however, that many technical problems remain to be solved, and that these might limit the use of forest residues in the pulp, particle board, and fiberboard industries.

WILLIAM G. MAHONEY

## Marine Sciences Center in Mexico Will Search For New Food Sources

*MEXICO CITY*—An Interdisciplinary Center of Marine Sciences will begin functioning in September in the City of La Paz, Baja California South, the Mexican Secretary of Public Education, Victor Bravo Ahuja, has announced. Its goals will be the search for new food sources, improved administration of marine resources, and reduction of contamination of Mexico's seas.

Eventually, the center is seen as a policy-making institution, interacting with federal and state agencies to benefit all aspects of Mexican marine sciences. Priority is being given to marine biology as a beginning basic course of study, with other fields to include physics and mathematics, chemistry, and geology, the secretary said.

Mexico's present marine sciences program began in 1972 when President Luis Echeverria created a National Plan of Technical and Scientific Education on the Sea. Its aim was to encourage the preparation of technical, scientific, administrative, and teaching personnel for the development and exploitation of the seas. Thirty basic-level fishing technology schools were opened in September, 1972; and in 1975, five superior-level centers on marine sciences and technology began instruction.

KATHERINE HATCH

## Austria's Once-Pure Air Is Being Harmed by Growth of Industry

*VIENNA*—Keeping the air pure over Austria is more difficult than the mountainous and open character of that country might suggest, according to recent reports of the Federal Chamber of Commerce and the Federal Health

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Ministry. The through roads linking Vienna, Yugoslavia, and Italy with Germany are, during most of the summer and at holiday seasons in the rest of the year, tunnels not only of metal but of petrol and oil fumes. The rapid growth of industries along the Danube, in northern Styria near the iron mines, and in the suburbs of most towns everywhere also poses serious problems of air pollution.

Where the towns or suburbs have grown along with the industries, control of air pollution is largely a matter of area planning. But where a township has grown up around a previously isolated factory, the problem is more difficult. Recently, in a Vienna suburb which had grown around a long-established and expanding factory, a serious fire resulted from the ignition of noxious and inflammable gases which would have been either prohibited or controlled under planned growth patterns.

In the last resort, control of air pollution from traffic lies with the traffic police; pollution from excessive smoke or emission of carbon-dioxide or sulphur-dioxide or any of the monoxides lies within the competence of provincial governments which are notably more quick to act over air pollution violation than over water pollution. Governmental intervention lies less with prosecution of offenders than it does with investigating all technical possibilities of improvement. The Austrian system of social partnership, ensuring cooperation of employers and employees, helps to ensure that improvements found to be possible are, in fact, made. The official cooperation of the Federal Chamber of Commerce with the Federal Health Ministry discourages the smaller manufacturer from pleading insufficient funds to spare for making ventilating or fume-control improvements.

Apparatus for testing pollution and, more important, detecting it before it becomes publicly noxious, is being installed in most major industrial areas. An instance of such regular observation and testing occurs in Linz, Austria's steel-making centre. Installed near the top of a skyscraper, the apparatus functions with a 24-hour clock that is monitored regularly by an attendant. The sensor is directed at factory shafts, blast furnaces, rolling mills and, occasionally, at thick traffic in the town streets. On occasions it watches private offenders whose fires emit excessive sulphur dioxide. If there is failure to use a ventilator and an invisible cloud of noxious gas belches out into the air, the factory is informed immediately. All the major steel and other factories in Linz have been found to cooperate with this warning system very satisfactorily. Linz air, for example, is now much purer than it was even a few years ago.

Air pollution from traffic, however, remains an unsolved problem. To keep cars moving, one stream has often, as in Vienna, to be directed through long, narrow twisting streets in the old town. There, as in many old cities of Europe, the degree of contamination by petrol exhaust remains uncomfortably high with no solution in sight.

EDWIN BROOK

## Pakistan Secures Major Loan For Water and Sewerage Project

*ISLAMABAD, Pakistan*—The Asian Development Bank has approved a 40-year loan of \$22 million to the Islamic Republic of Pakistan for the Hyderabad Water Supply and Sewerage Project—the first bank-assisted water supply and sewerage project in this country. The city of Hyderabad, in Sind Province, is located on the left bank of the Indus River, about 150 km. northeast of Karachi, and is an important agricultural and industrial centre. It is the fourth largest city in Pakistan and has a population of nearly 700,000.

The project, which is expected to provide substantial health benefits in the region, will focus first on providing safe piped water by increasing the capacity of water treatment facilities from 64,000 cubic meters per day to 200,000 cubic meters per day through the construction of a new treatment plant having a capacity of 136,000 cubic meters per day. The additional capacity is estimated to meet the demand up to 1987 for the Greater Hyderabad area. In 1975, about 30 per cent of the total urban population had access to a piped water system of which 12 per cent received water through individual house connections and the remaining 18 per cent from public standposts and water vendors.

It is expected that the water supply program will be operational by the end of 1980 and the sewerage construction completed by the end of 1982. Total project cost is estimated at \$34.65 million. During the implementation phase, the Public Health Engineering Department of the Government of Sind will have overall responsibility for the construction of Project facilities and for providing the necessary technical supervision.

MOHAMMAD AFTAB

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## PCB POLLUTION: Five-Year Legal Case Ends In Japan

**TOKYO**—Hearings in the five-year trial of the "Kanemi Oil Case," one of Japan's worst instances of chemical pollution, were concluded recently with final presentations by the plaintiffs and the defendants. A final judgment is pending.

The case stemmed from charges that rice-bran oil containing polychlorinated biphenyl (PCB) had caused either injury or death to persons in the western section of Japan, beginning in the autumn of 1968. Symptoms of the disease ranged from skin eruptions to numbing of the limbs.

A group of 729 alleged victims and the families of those who died brought the case to the Fukuoka District Court in Kyushu five and a half years ago. They are seeking a total of \$38.5 million in damages. The suit was filed against the government, the Kitakyushu Municipal Office, Kanegafuchi Chemical Industry Company (producer of PCB in Japan), and the manufacturer of the bran oil—Kanemi Warehouse Company.

**Widespread Concern**—This highly-publicized case and several other reports of adverse effects on health elsewhere in Japan have created widespread concern throughout the country concerning the cumulative pollution of foodstuffs and water by PCB.

Commercial protection of PCB in Japan began in 1954, and thereafter increased steadily, finally reaching 11,100 tons annually in 1970. The cumulative total domestic consumption of PCB stood at approximately 53,000 tons that same year. Approximately 63 per cent of this was used in the manufacture of electronic equipment—transformers and condensers—because of its nonflammability and heat retention qualities. It also was used in production of thermal catalysts, carbonless copypaper, and paints.

The Department of Medicine of Kyushu National University took the lead in investigating the Kanemi Oil case by organizing a study team in October 1968. That same month the Ministry of Health and Welfare established an investigating headquarters to look into the contamination of rice bran oil.

**Contaminated Oil**—It soon became clear that the rice bran oil manufactured by the oil products division of the Kanemi Warehouse Company in Kitakyushu City was the source of the contaminated oil. It was on October 15 of that same year that the Kitakyushu City administrators ordered the firm to suspend business for a month and prohibited sales and transfer of rice bran oil manufactured by Kanemi.

The finding in the rice bran oil of unusual amounts of chlorine not originating from agricultural chemicals led to a detailed study of the company's manufacturing process to determine where the chlorine came from. It was ascertained that PCB used in the heating unit in the deodorization process had leaked into the rice bran oil

from a small break in the piping. To prevent similar accidents, the Japanese Ministry of Health and Welfare directed that the use of PCB as a heating medium in food manufacturing processes be eliminated.

**PCB Poisoning**—Since then an extensive research program has been continuously pursued under the initiative of the Environment Agency and the Ministry of Health and Welfare. Surveys of rivers and river-bed silt have been undertaken, and food examined for possible PCB contamination. In addition, these agencies have conducted research into the effects on human health of PCB poisoning.

Japanese scientists have been given the task of identifying processes in which PCB can be accumulated and transferred through various organisms to the human body. Work also is being pushed to refine analysis techniques and to improve the methods for treatment of PCB poisoning.

The Ministry of International Trade and Industry (MITI) banned use of PCB in all pressure-sensitive copypaper beginning March 1971. Use of the chemical combination in paints and other consumer products was banned in January 1972.

**Complete Ban**—Finally, in June of 1972, MITI authorities prohibited all use of PCB—except where safety is guaranteed by confinement within enclosed products that are totally retrievable—and stopped all production within Japan of PCB. Only limited amounts of the compound may be imported, and then only on a tightly regulated basis.

Officials of MITI simultaneously directed other Japanese governmental agencies to take appropriate measures to protect the public against PCB pollution, and further warned of the necessity to carefully check discarded electrical appliances, manufactured before 1972, for PCB components.

Present laws in Japan dating from March of this year prohibit the disposal of discarded household electrical appliances, transformers, condensers, and other electrical items containing PCB in landfills or in coastal water dumping. Instead, any appliances and electrical items containing PCB components must be burned at a temperature of more than 1,200 degrees Centigrade for at least 20 minutes if these parts cannot be removed from the product without great difficulty. Removed components, in turn, must be burned at such high intensity and for long enough to reduce the amount of PCB in each component to a figure below 0.003 parts per million. Only then can they be discarded.

**Three-Stage Method**—Meanwhile, what is claimed to be an ideal method of disposing of PCB using ultraviolet rays and without causing secondary pollution has been developed by a nine-member project group commis-



sioned by national governmental authorities.

With this three-stage method, PCB reportedly can be resolved into salt, biphenyl, and other relatively harmless substances. In the first stage, PCB is placed in a tank containing sodium hydride and 2-propanol to remove chlorine, and also break down 99.8 per cent of the PCB. In the second stage, the PCB is processed further, breaking down into solvents and other materials.

At this point, the group report noted, the residual PCB is again put through the first stage sequence for further dissolving. In the final stage the left-over waste and gases are burned for reasons of safety.

**Costly Process**—The amount of PCB left at this point in the process is only 0.4 ppb, less than 0.4 gram per 10,000 tons of PCB, according to the study group. This is the method which is being recommended to the Japanese Government as a replacement for the incineration process which releases harmful materials into the air. However, this new process is much more costly than the incineration method—probably 1.9 times more expensive—and this does not include the cost of constructing the necessary plants. Considering the high cost involved, it is yet to be seen whether the Tokyo Metropolitan Government will elect to proceed with such construction.

Meanwhile, however, already established standards to combat PCB pollution of water are working out exceptionally well, according to Tatsuo Ozawa, director general of the Japanese Environment Agency. Discharge of PCB-tainted waste water is being strictly regulated to guarantee that PCB levels in water and sediments in Japan's fish and shellfish—whether accumulated directly from the contaminated environment or through the food chain—will not exceed 3 ppm using gas chromatography measurements.

Where sediment is involved, the Japanese take into consideration the analyses of the relationship between the PCB pollution of fish and shellfish and the pollution densities in the same general area of the sediment. Any reading of around 10 ppm causes the agency to order removal of the sediment. ALVIN E. CULLISON

## Danes Add Water to Heavy Fuel Oil To Sharply Reduce Soot Formation

**COPENHAGEN**—The Danish Technological Institute has discovered that adding water to heavy fuel oil can reduce soot. At present heavy fuel oil used in power stations, heating plants, and industry spreads 30 to 40,000 tons of soot annually as the result of the residual unburned oil.

It has long been known that mixing water with oil improves its burning because water expands 1,700 times when turned to steam and therefore helps break up the oil drops.

But previous attempts at making a water-oil emulsion have been based on adding large amounts of water,

between 15 and 40 per cent. That proved uneconomic because too much heat was consumed in boiling the water.

Now the Technological Institute has found that if the drops of water were finely distributed in the oil by some means such as homogenization or whipping, only two or three per cent water need be added. The Institute reported that this amount reduced the amount of soot and oil coke by 85-95 per cent.

Regardless of how much oil coke was produced before, the experiment in various plants reduced it to between 0.1 and 0.2 grams per kilogram of oil burned. The officially permitted level was ten to 15 times greater—1.5 grams for large installations, 2.5 grams for smaller.

The Institute pointed out that the new method was also less costly because the amount of soot going into the air represented a loss of 20-25,000 tons of unutilized oil.

CONSTANCE BOULTWOOD

## Colombian Wildlife Service Fights Plans to Step Up Coal Exports

**BOGOTA**—A heated debate over pollution between coal producers and the Colombian wildlife service INDERENA threatens to sidetrack the national government's plans to make Colombia Latin America's foremost coal exporter. (Colombia owns two-thirds of Latin America's coal reserves, or some 40 billion tons.)

Although national authorities have chosen Santa Marta on the Caribbean coast as the country's future coal port, neither the city fathers nor INDERENA want anything to do with the project, claiming it will spoil the pristine bay and beaches that have made Santa Marta a major resort attraction for Colombians and neighboring Venezuelans.

Municipal authorities have staunchly opposed the construction of a coal depot and port facilities on the basis that it will ruin tourism, Santa Marta's primary source of income. They are supported by INDERENA which has placed the onus of proving non-pollution on the coal exporters.

Since Santa Marta is the nearest port to the rich coal fields on the Guajira Peninsula and the only Caribbean terminus of the railroad to the coking coal fields of central Colombia, coal exporters are demanding that the national government overrule INDERENA and municipal authorities.

A shipment of 60,000 tons of coal is currently being help up by Santa Marta officials, according to Arturo Blanco Ordonez, president of Promotora de Comercio, one of Colombia's leading coal exporters. Blanco Ordonez said this was "ridiculous," particularly since Colombia had just signed an agreement with coal-hungry Brazil, thus paving the way for the exchange of large quantities of coking coal for Brazilian iron. He maintains that Santa Marta officials are breaking a 1967 law that encourages coal exports and that INDERENA is "neither serious nor just." PENNY LERNOUX



## Palm and Groundnut Oil Is Used To Combat Food Scarcity in Nigeria

**LAGOS**—Nigeria, one of Africa's largest countries, with a population of about 80 million people, has taken a giant step to combat food scarcity and high prices.

In pursuing this goal, the Federal Military Government, in addition to directly procuring food items from local and foreign sources, has directed the Nigerian Produce Marketing Company (NPMC) to make available for purchase 2,000 tons of palm oil and about 11,000 tons of groundnut oil from its bulk oil installations.

To facilitate the distribution of the palm and groundnut oils, the government has ordered 200,000 units of 18 litre (about four gallon) size tins for getting the products to the consumers. Each of the 19 states of the Federation will be allocated 4,000 units of the 18-litre tins, according to an official announcement made in the Nigerian capital.

In addition, the government has bought 2,000 units of 209-litre drums, of which 1,000 will be used for evacuating palm oil from the NPMC's installations.

Since it is evident that Nigeria's main problem is not food scarcity but defective distribution of the commodity, the government has appealed to all the 19 state governments to cooperate with one another to ascertain the types, quantities, and prices of local food items available in each state. To put these operations on a sound footing, direct purchases on an inter-state basis have been advocated by the government.

To ensure even distribution throughout all the strata of the Nigerian society, the federal ministries and departments statutory corporations and other institutions are attempting to get supplies of commodities from depots located throughout the country.

The overall objective of the Federal Nigerian Government is to ensure a constant and abundant supply of food items to all parts of the country. In this connection, the government has completed arrangements for the importation of corned beef, rice, salt, tomato puree, sardines, and particularly the import of sugar.

J. BLAMO ROBINSON

## Argentina Develops Rocket System To Destroy Hail Cloud Formations

**BUENOS AIRES**—The Argentine air force is developing a rocket system for breaking up hail cloud formations in the grape-growing Mendoza region. Hail storms annually destroy more than \$20 million worth of grape crops in this western central area bordering Chile.

The system, based upon a Russian model, uses rockets to chemically seed potential hail clouds to prevent the hail from developing. Two rockets are being developed by the air force Institute for Aeronautical and Space Investigation, the CLAG I and the CLAG II.

CLAG I, the smaller rocket, can lift one kilo (2.2

pounds) of chemicals to altitudes of 6,000 meters (6,562 yards). CLAG II can lift five kilos (11 pounds) of chemicals to altitudes of 10,000 meters (10,936 yards).

With two years of experimental work already completed, the five-year plan for fully developing the system is scheduled for inauguration between October, 1978 and March, 1979. Upon completion, the system would protect 100,000 hectares (247,000 acres).

However, the inauguration may be delayed because of rapidly rising costs due to an inflation rate last year of 335 per cent. Officials say it is impossible right now to figure readjusted costs.

Costs for the five-year plan were estimated at about 10 per cent of the average yearly harvest losses with annual operating costs after that averaging about 2 per cent of current losses. The hail cloud system would require 1,000 CLAG I rockets and 150 CLAG II rockets a year.

If the system works in Mendoza, the air force will expand it to cover the orchard regions of Rio Negro.

AGOSTINO BONO

## Brazil's New Oyster Farming Course Offers Hope for Industry Expansion

**RIO DE JANEIRO**—The first oyster farming course in Brazil gets under way this month under the aegis of the country's fishing superintendency (SUDEPE). The three-month course to be held in the fishing town of Canoneia, in the state of Sao Paulo (Brazil's oyster capital), will cover the ecological and biological aspects of the oyster industry, right through the harvesting, cleaning, preserving, and marketing operations.

Although Brazilians have been experimenting with commercial oyster farming for only several years, SUDEPE officials think that the country offers a great potential for the expansion of the oyster industry.

Oyster experts here have concluded that the life cycle of the local oyster lasts 16 months and after that only the shell grows. This cycle is divided for commercial raising purposes into two stages: the first being the larvae nursing stage which lasts four months, followed by a second stage of 12 months during which the oyster grows and fattens.

In the first stage the larvae is collected by wire collars with tree bark beads from the oysters' natural habitat. These collars are rigged on bamboo poles, sunk into the spawning grounds and left there for a fortnight.

For the next three-and-one-half months the larvae undergo the "punishment treatment." They are placed on a beachside swamp so they will be under water during high tide but exposed to the sun and air during low tide. Only the strong larvae that survive this treatment are allowed to enter the second stage of the oyster farming cycle. Small pieces of bamboo are used to separate the surviving oysters on the wire collar. After being returned to the swampy beach for a year, these surviving oysters will have grown to a commercial size of five to ten centimeters in diameter.

GEORGE HAWRYLYSHYN



## In Brief...

### Conservation Groups Urge Malaysia Not to Build Dam

The World Wildlife Fund (WWF) and the International Union for Conservation of Nature and Natural Resources (IUCN) have urged Malaysia to explore alternatives to the proposed Ulu Tembeling dam on the grounds that it will do irreversible damage to rich lowland rain forests in the Taman Negara National Park.

In a joint letter to the Prime Minister, Datuk Hussein Onn, the two international conservation organizations headquartered in Morges, Switzerland, offered their assistance in carrying out an assessment of the situation.

They declared that the Taman Negara Park, in central peninsular Malaysia, was one of the finest and most important in the tropics and contained excellent samples of a vast range of lowland rain forests together with an equally rich and diverse collection of plants and animals. Many of the lowland forest types were unique and not represented anywhere else in the world, they added.

The WWF and the IUCN did not contest the need for a dam for power supply and flood control, but said that alternatives should be explored which would permit construction with less adverse environmental effects.

### Irish Republic Secures Its First Natural Gas Pipeline

The first natural gas pipeline in the Irish Republic, which will distribute gas onshore from the find made by the Marathon Petroleum Co. of America at the Kinsale Head Gasfield off the southern coast of Cork, will be monitored closely for noise levels and other environmental factors. The Irish semi-official research body, the Institute for Industrial Research and Standards, is charged with overseeing the entire project

before, during, and after construction.

The institute, which spent roughly \$5.4 million for operations in 1975, is now in the process of setting up permanent new regional headquarters in Cork. Its emphasis will be on engineering services, building, ocean services, technical liaison, pollution, food, automatic measurement and control, industrial engineering (energy) and acoustics.

As the research and advice centre for Irish industry, commerce, and consumer activity, the institute received 800 complaints in 1975 about the technical or other quality of goods sold. It found about half of them to be justified, and assisted consumers in getting their money back or other satisfaction from the manufacturers.

### Liquid Natural Gas Ruled Out for Taxis in Athens

The Greek Ministry of Transport has ruled out the use of liquid natural gas instead of gasoline for Athens' taxis despite wide support by private anti-pollution groups. Liquid natural gas is quite similar to propane.

The Ministry said the switchover to liquid natural gas by the 12,000 taxis in the capital would have serious economic consequences for the state's public revenue because it is taxed at a lower level than is gasoline.

Legal use of liquid natural gas has been one of the main demands by taxi owners since the latest increase in oil that sent the gasoline price up to \$.50 per liter. Another demand, also rejected by the government, was the switchover to diesel engines.

Although defeated on this issue, environmentalists could take some cheer from the decision of Athens municipal authorities to turn certain shopping-center streets in the central city into a traffic-free zone.

Costas Kandiloros, spokesman for a group of local planning engineers, said a recently conducted trial had proved highly successful and that the measure "will facilitate pedestrian movement in this part of the capital

and significantly reduce atmospheric and noise pollution."

A poll of shopowners in the area showed that 71 per cent approved the plan, some because they thought it would improve sales, and others because it would reduce smog and noise. Of the pedestrians polled, 77 per cent also supported the concept.

### Substitute For Asbestos Claimed in Denmark

The Danish manufacturer Karl Kroeyer has announced the discovery of what may be a feasible substitute for asbestos, the manufacture of which is associated with lung diseases.

Called "Low Temperature Ceramic," it is described as being a little heavier than Eternit, but also 10-20 per cent stronger. The new product can be pigmented, shaped, and used in conjunction with other materials, such as wood and steel.

The firm said that contracts had already been signed with buyers in the United States and Japan.

### U.S. and USSR Call for Ban On Environmental Warfare

The Geneva Disarmament Conference began its summer session here (June 22) with both the United States and the Soviet Union calling for early agreement on a treaty banning environmental warfare.

The draft treaty, tabled originally by the U.S. and the Soviet Union, would ban manipulation of weather for military purposes.

U.S. chief delegate Joseph Martin, Jr. urged the 31-nation conference to concentrate upon the draft treaty during the summer session that is scheduled to end in late August. He called on delegates to "make every effort" to agree on a final text that could be presented to the Fall session of the United Nations General Assembly.

The new Soviet chief negotiator,



Viktor I. Likhachev, said he agreed with Martin that a ban on environmental warfare stood the best chance of obtaining agreement this year. But he added that the conference should also agree upon a Soviet proposal made in 1972 to ban the most lethal chemical weapons as a stopgap measure, pending accord on an overall treaty prohibiting all such weapons.

Observers, however, noted one shift in Soviet policy on the environmental warfare ban. Likhachev declared that his country was not prepared to allow a special committee of experts to consider the procedure for possible violations of the treaty before such problems would be referred to the United Nations Security Council. During earlier meetings this year the Soviet had opposed demands by Sweden and The Netherlands that any violation first be reported to experts from signatory nations. At that time Moscow argued that this procedure would create political and legal difficulties and make it harder to reach agreement on the text of the draft accord.

### FAO Meeting in Bogota Told of Poor Use of Forests

Latin America's ecological outlook will be extremely bleak unless measures are taken immediately to protect the environment, representatives of 20 Latin American nations concluded at a meeting in Bogota sponsored by the UN Food and Agriculture Organization (FAO).

As an example of the problem, Chilean delegate Sergio Salcedo cited Latin America's poor use of its forest reserves. "Although this continent accounts for one-quarter of the world's forests, paradoxically it has a deficit in lumber and paper production," he said. Moreover, the deficit has risen from \$200 million in 1965 to \$460 million, mostly in paper imports.

Salcedo explained that one of the reasons for Latin America's poor performance in this sector is its

limited conifer reserves—important for paper production—which account for only 40 per cent of the region's forests. He added that Latin Americans do not know how to exploit their tropical forests even though the technology is available.

### Heating Facilities Cause Korean Air Pollution

A survey conducted by the Korea Environment Protection Institution in Seoul has revealed that pollution in the metropolitan area of that city is severe. Of the 4,370 people interviewed, 75 per cent claimed they get headaches or have difficulty in breathing. In addition, 45 per cent of those surveyed noticed pollution mostly during the rush hours, 31 per cent of them noticed pollution when they went on outings to the suburbs and 12 per cent of them noticed pollution all the time. Of the 2 million tons of materials causing air pollution in the country, 530,000 tons came from Seoul.

The main causes of such pollution, the survey found, were heating facilities that emitted 41.4 per cent of pollution-causing materials, automobiles 28.4 per cent, factories 21.8 per cent, and thermal power plants 8.4 per cent. In addition, it was discovered that about half of the kitchens and rooms checked in Seoul were contaminated with coal briquette gas, and three per cent of the citizens in Seoul were estimated to have suffered from poisonous carbon monoxide gas at least once.

Moreover, the precipitating dust in Seoul was found to be twice as high as that of the industrial areas in Japan (with a monthly average of 354 tons per square kilometer as compared with 15 tons in Japan). This high intensity of air pollution in Seoul was possibly due to the inadequate anti-pollution facilities. Of the 2,000 factories, apartments, high-rise buildings, and public baths in Seoul, only 7 per cent of them were equipped with environmental control facilities.

Water pollution was also aggravating. The survey found the Han River was increasingly polluted due to the filthy water coming from houses and factories. The degree of cadmium in the downstream areas of the river was as high as 1.5 to 2 times that of the permissible level. Finally, the survey also revealed that the inhabitants of Seoul were suffering from noise pollution. About 70 per cent of the people interviewed commented that the government measures against pollution have been too lenient and most of them (92 per cent) wanted a ministry-level office set up to deal with anti-pollution measures.

### Protective Ear Devices Are Developed in Buenos Aires

The acoustics division of the National Industrial Technology Institute in Buenos Aires is developing protective ear devices for industrial workers. The devices filter out loud factory noises considered harmful to hearing while allowing for normal conversation.

Thus far, the institute has developed two types of devices: one worn within the ear and another over the ear. But both have certain drawbacks. The outer device puts undue pressure against the head, while the inner device is apt to be unhygienic because factory dust can cause infection.

The institute is continuing testing to refine the devices, including regular use on an experimental basis by workers in two large smelting factories.

### Colombian Company Pays Large Fine Over Sulphuric Gas

In an historic first-ever decision, Colombia's Supreme Court has upheld a lower court ruling forcing Sulfacidos S.A. to pay a textile company \$142,000 in damages for polluting the environment in which both industries work.



Sulfacidos earlier was fined by the city of Medellin in western Colombia for contaminating the atmosphere with over a ton a day of sulphuric gas. Although a wash plant was installed to reduce pollution, it did not eliminate the problem. Hilanderias de Medellin, a nearby textile factory, therefore sued the company on grounds that the pollution had damaged its workers' health and plant machinery.

In upholding a Medellin court ruling in Hilanderias' favor, Colombia's Supreme Court set a precedent for future pollution suits based on "the unjust attack on the rights of others" and lack of "civic responsibility."

## USSR Scientist Advocates Ban On Nuclear Dumping in Sea

A leading Soviet scientist declared in a Moscow press conference held in mid-July that nations should agree upon an international ban on dumping nuclear wastes in the sea.

Anatoly Alexandrov, president of the Soviet Academy of Sciences, said

that his country buried nuclear waste deep underground in specially selected geological formations where there would be no risk from leakage.

But other countries, he said—naming Britain specifically as a major offender—seal their radioactive wastes in containers and dump them into the sea. This practice, he stated, was dangerous, and the British, he added, "have let out into the Atlantic Ocean radioactive water containing fission fragments."

Agreement on banning sea dumping could be sought within the International Atomic Energy Agency (IAEA), Alexandrov said.

The scientist also came out strongly for development of nuclear power, citing the limited resources of traditional fuel. He dismissed fears in many Western nations over nuclear power stations. "One way or another, atomic technology will have to be used in order that the world's economy and technology can develop," he said, noting that thus far Soviet stations had caused no difficulties.

Soviet stations operate under special regulations, he explained, and the cost of safety checks account

for about one-half of the entire cost of station equipment. He said that one-fifth of electricity produced by new Soviet power plants will come from nuclear stations within the next five years.

## Wildlife Service in Colombia Finances Reforestation

The Colombian wildlife service INDERENA has reached an agreement with the Indian tribes in the country's Amazon territory to finance reforestation and pay the Indians for every tree that survives. The newly created 100,000-acre Amacayacqui Park will receive priority attention, according to INDERENA director Julio Carrizosa.

The reforestation project is part of a multilateral program to protect the Amazon Basin begun last year with the participation of Brazil, Colombia, Ecuador, and Peru. An intergovernmental committee representing these nations will study progress achieved to date at a future meeting in Quito.

## Calendar . . .

**August 30 - September 3**—Symposium on Problems Related to Solar Energy Utilization. Geneva. Sponsored by the UN Educational, Scientific and Cultural Organization (UNESCO) and WMO.

**September 1-3**—Working Group on the long-Term Effects of Air Pollution on Respiratory Diseases in Children. Katowice, Poland. European Regional Office of WHO.

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 27 - October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27 - October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jönköping, Sweden. ELMIA Exhibition/Conference Center.

**September 27 - October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27 - October 1**—Committee on Water Problems. Geneva. ECE.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 17-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.





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## Law of Sea Conference Ends With Progress on Environmental Front

*UNITED NATIONS, N. Y.*—The fifth session of the UN Conference on the Law of the Sea (LOS) ended here, on September 17, much as it began—with most of the major economic issues unresolved but with progress reported on some key environmental proposals (*WER*, Aug. 16, p. 1; Sept. 13, p. 1).

Although this session was intended to be the final one prior to the drafting of a treaty convention, Hamilton Shirley Amerasinghe, the President of the Conference (and the newly-elected President of the UN General Assembly), announced it would be necessary to convene yet another negotiating session in New York next May.

While public attention focused on the bitterly contested economic issues concerned with the exploitation of the mineral rights in the deep-sea beds, almost lost sight of was the work of the Third Committee, which dealt specifically with the marine environment—its preservation and protection, scientific research, and the transfer of technology.

In his general summary of that committee's work, Chairman A. Yankov of Bulgaria reported that "important progress" had been made "towards the elaboration of draft articles on the three items allocated to the Third Committee."

One of the key issues under debate concerned vessel source pollution—a subject entrusted to a special group under Jose Luis Vallarta of Mexico. Mainly in contention here was whether State sovereignty was being unduly eroded—vis a vis coastal State competence—in the matter of the design, construction, manning, or equipment of foreign ships. This question remains to be fully resolved.

Some progress, however, was made on the obligation of flag States "to insure periodical inspections to verify conformity of the certificates [of international rules and standards] with the actual condition of the vessel." Other amendments adopted would require a "written request" for the flag State to initiate an investigation of a violation alleged to have been committed by one of its vessels, and the obligation for flag State penalties to be "adequate in severity."

Progress also was made with regard to the obligation of port States to investigate discharge violations upon the request of any State and, in turn, to allow States "damaged or threatened" by violations to request investigations.

Although there was no agreement on a compromise formula regarding marine scientific research, Chairman Yankov evolved a new text for the key article concerning an appropriate balance between the general consent of the coastal State for the conduct of scientific research and the guarantees for the researching States. One of the major controversies here is under what conditions coastal States may withhold their consent to research conducted by another State or by a competent international organization in the 200-mile economic zone or on the continental shelf.

Finally, the question of transfer of marine technology remained bogged down in jurisdictional matters having to do with the participation of the International Sea-Bed Authority—a concept that fell mainly under the purview of the First Committee.

In summing up the work of the Third Committee, Chairman Yankov said: "It will be a great setback if the achievements and progress made during this session will be lost, since in my personal opinion we have successfully narrowed the issues and I believe that our common objective is almost within our grasp." A.W.

## Congress Approves \$10 MM Bill For UNEP Activities in 1977

*WASHINGTON*—By substantial majorities late in September, both chambers of Congress passed and sent to the White House the foreign aid appropriations bill for fiscal year 1977. There is no likelihood of a Presidential veto. Among the major items approved was the \$10 million assistance authorization for the United Nations Environment Programme (UNEP).

Initially, this item had been hotly contested. The Executive branch had requested only \$5 million, a figure

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readily accepted by the House. The Senate, however, favored the higher figure of \$10 million and, in joint conference committee, it finally prevailed (*WER*, Sept. 27, p. 6).

Just prior to the final vote, Rep. Richard L. Ottinger (Dem-NY) had congratulated the House Conferees for adopting the higher Senate figure for UNEP. Ottinger is chairman of the Environmental Study Conference—a bipartisan group of Representatives concerned with environmental issues.

In his remarks, Ottinger stated that "UNEP in its four years of existence has taken an active role in essential programs which affect the environmental health of the whole world. At the moment, UNEP is engaged in a massive program to clean up the Mediterranean which is threatened with extinction within the next century. Because of its success with the Mediterranean project, UNEP has extended its work in marine pollution control and hopes to initiate projects in the Persian Gulf, the Caribbean, and West African coastal waters.

"UNEP has also assisted in establishing warning systems for tropical cyclones. . . and has written environmental policy on increased food production in tropical areas in Africa through pest and insect control.

"UNEP is working to set up a ten-year moratorium on commercial whaling; it is involved in a desert control program in the Sudan; a world-wide toxic chemicals project; and an "Earth Watch" program, or global environmental monitoring system.

"Certainly, all of these programs deserve the support of the United States, and we have truly 'shown our colors' in the figures included in the conference report." A.W.

## British Scientist Advocates More Research on Fast Breeder Reactors

**LONDON**—Dr. Walter Marshall, chief scientist to the Department of Energy and formerly director at the nuclear research establishment at Harwell, stated recently that there is a "real risk" that the British nuclear industry may not survive the next two decades unless substantial investments are immediately forthcoming.

Sir Walter's report, entitled "Energy R and D in the United Kingdom", which was presented at the National Energy Conference, forecasted an "energy gap" toward the end of the century when Britain's natural gas and oil deposits will have been depleted. Although few nuclear power stations are needed now, Sir Walter argued that unless the industry was nourished and developed Britain would eventually be forced to import such plants from the U.S., France, and the Federal Republic of Germany.

The implication of this argument is that the Government should promote the proposed pre-commercial demonstration fast breeder reactor (FBR). Sir Walter's statement is part of the ongoing fierce debate about the FBR which is likely to continue until Secretary of State for Energy, Tony Wedgewood-Benn, announces the

Government's decision on its future in the autumn.

A significant public challenge to the assumptions of the R and D report and Sir Walter's views has already been made in a joint article in the Times by John Surrey, John Cheshire, and Norman Dombey of Sussex University. Surrey is Senior Fellow and Cheshire a Fellow of the Science Policy Research Unit there, and Dombey is Reader in Theoretical Physics.

They argued that the rapid growth in per capita energy consumption in Britain to 12 tons (of coal equivalent) by the year 2,000, which the report forecast, does not seem warranted by previous data because electricity growth already has been flatter over the past decade than had been anticipated. They think there is ample scope for energy conservation in both industrial and domestic use. As an example, they point out that since over half the growth in final energy consumption since 1960 has occurred in road transport, a co-ordinated energy and transport policy could reduce this.

Following the publication of this joint article, Surrey took the unprecedented step of resigning as advisor to the House of Commons Select Committee on Science and Technology, which is to issue a report on its inquiry into the country's FBR program.

Without the projected "energy gap" the future of the nuclear industry would certainly be seen very differently. The authors of the Times article concluded that the capital costs of a commercial FBR (they quoted a recent U.S. estimate of \$5,000 million) would place a colossal burden on British public expenditure which could be better employed elsewhere. Among their suggestions were research on new energy technologies, coal conversion, and thermal reactors. Britain had time and more to gain, they thought, from watching from the sidelines.

ALAN MASSAM

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## Mexico Funds Plan For Improving Environment in Popular Acapulco

**ACAPULCO**—This popular Mexican resort soon will be revitalized through a federally-initiated "Plan Acapulco" to combat environmental problems on all levels. A recently-formed technical committee for the plan will coordinate federal, state, and local projects; devise short, medium, and long-term goals; and administer an initial federal fund of \$12 million.

Finance Minister Mario Ramon Beteta defined the plan as encouraging economic and social development in this Pacific Ocean port. About half of the plan's goals deal with environmental clean-up, and the remainder with development.

High on the list is decontamination of picturesque Acapulco Bay, ringed with luxury hotels and murky with trash, garbage, and rainfall runoff from the clusters of shacks that cover the surrounding hills. Construction of a new commercial port away from the tourist areas will aid in the clean-up of surrounding waters.

Public investments exceeding \$37 million already have been authorized for the remainder of this year. A prime project is the creation of public housing for the estimated 100,000 persons who live without adequate houses or services on the hillsides. Improved city services on all levels, from garbage collection to a new highway to the airport, also will be realized through the plan, as will the development of new tourist areas and upgrading of existing ones.

Acapulco has an urban population of 352,000, with rural inhabitants numbering 86,000. Tourism is the major industry, with 1.5 million visitors counted last year, providing jobs for more than 40,000 residents.

KATHERINE HATCH

## Haiti Makes Its First Serious Effort to Explore For Oil

**PORT-AU-PRINCE**—In a nationally televised announcement, President Jean-Claude Duvalier recently revealed that his government has signed a major oil exploration contract with an American company, "Southern Cross," which will act as a contractor for the Haitian government agency, The Institute of Natural Resources. The new contract created quite a stir in that it marks the first really serious attempt in Haiti to explore for oil.

Southern Cross has a successful track record in locating highly productive oil fields, especially in the Far East. One of its major oil finds was on Indonesia's continent in a joint venture with the Indonesia National Petroleum Company (PERTAMINA). Another Southern Cross subsidiary, IIPACO, brought in offshore wells along the coast of Java and still another Southern Cross company, TREND, found high-production petroleum sources off the northwest coast of New Guinea.

Oil exploration was last undertaken on a minor scale in Haiti in the early 40s and 50s before the advent of sophisticated electronic, sonic, and magnetic exploration devices. The Atlantic Richfield Company and others drilled several wells in potential areas on La Gonave Island and near the site of the present International Airport, but they were dry. Then in the early 50s, several wells drilled in the Central Plateau brought in small, noncommercial quantities of both gas and oil. However, geologists are now more optimistic about the area's potential, because only a short distance away, across Haiti's border with the Dominican Republic, that neighboring country now has several productive wells.

In the early 70s, an exclusive oil exploration contract with the Wendell Phillips Company was voided by the Haitian government which said that the company had violated contract terms by not starting any activity within a specified period.

The only company currently mining and exporting minerals from Haiti is Reynolds Aluminum, which has a bauxite operation along the southern coast of Haiti. However, the government has recently awarded two exclusive copper exploration and mining franchises to the giant U.S. Kennecott Copper Co. and the Rothschild-owned Pennaroya Company of France. Expectations for success are high because last year a United Nations team located rich sources of copper in Haiti's northern tier.

ART CANDELL

## Athens To Utilize Regular Police To Monitor Pollution Violations

**ATHENS**—The Public Prosecutor in this capital has recently ordered all police stations to intensify their efforts to prevent further deterioration of the city's environment from atmospheric pollution.

"The situation in Athens is getting worse and it is your duty to save the city from complete destruction," Spyros Kaninias wrote in a circular sent to all police stations. He asked police authorities to investigate thoroughly whether industries and factories in their area are taking the necessary measures to prevent noise and atmospheric pollution, "since indications exist that many disregard anti-pollution laws."

Kaninias also demanded strict control of buses in Athens, particularly in the hub area, to reduce to a minimum fume exhausts until buses in high-traffic areas can be replaced with electric trolleys.

Kaninias also requested a special file to be compiled for each local industry and factory to be submitted to him by the end of October. He said this was needed "to ascertain the present condition of their functioning, and measures proposed for their improvement."

"If they do not comply with instructions, you are authorized to recommend the strictest punishment before any court of law," Kaninias said. "The almost unbearable pollution levels reached demand such action."

KYRIACOS CONDOULIS



## Kenya's Reservoir of Wildlife Subjected to Massive Depredation

**NAIROBI**—Public opinion is being aroused in this Kenyan capital as the populace becomes increasingly aware that the National Parks of Kenya, which contains the world's last great reservoir of wildlife, are being subject to massive and unprecedented depredation.

Reports are circulating that organized gangs of poachers, operating on a commercial scale, are obliterating game at such a rapid rate that even common animals face the danger of extinction.

Government spokesmen in the Ministry of Tourism and Wildlife—which has jurisdiction over the sanctuaries—while vigorously denying the accusations, have ordered Park officials not to publicize the situation. But observations of field scientists and game wardens, plus an analysis of the statistical game counts, clearly show that the situation is critical.

The Attorney General of Kenya, Charles Njonjo, has endorsed accusations against the Game Department itself, which now has jurisdiction over the Parks. Just in a single day, observers recorded 100 animals killed on the borders of the unique Nairobi National Park. The density of zebra alone in the area dwindled, during a 26-month period, from 15,000 to 1,500. Zebra, it is obvious, will shortly become an endangered species. A recovery of 8,400 animal hides in Kenya's northern province—death resulted either from machineguns or poisoning—gave further indication that the carnage was indeed almost indescribable.

Elephant tusks, highly prized for their durability and rarity, and thus for their monetary value, are becoming increasingly scarce as masses of these giant mammals succumb to gunfire and poisoning. In Tsavo National Park, for example, where an estimated 1,300 poachers operate, a survey during one six-month period turned up 1,040 carcasses, all lacking tusks. The Park Warden claimed that "At this rate of offtake, the elephant will be extinct within five years."

Evidence of the scarcity of mature animals could be seen in the pathetic display of small ivory, from young elephant calves, displayed at the last official ivory auction held in Mombasa.

The rate of attrition against leopard, lion, kudu, and ostrich is no more encouraging. The rhino population, too, is being systematically reduced, according to official records, by an annual 15 per cent. Its reproduction rate, by comparison, is a mere four per cent.

Lake Nakuru, described as "the greatest bird spectacle in the world," and once home to some three million flamingoes, is now almost devoid of the flame-colored birds. Not far from the lake a factory has recently been granted rights to produce copper oxychloride, a fungicide used in the treatment of coffee berry disease. The flamingoes' diet is the blue-green algae, *Spirulina*, once produced by the lake in vast quantities. Copper oxychloride, however, is also a potent algacide. Even a

minimal amount of spillage into the lake's eco-system, environmental scientists say, constitutes a grave hazard to the closed-system lake, which is also a National Park.

Deforestation and burning of Kenya's four per cent of forested areas for the manufacture of charcoal still continue unchecked. It requires ten tons of trees to make a single ton of charcoal. Yet the ecological balance continues to be eroded as forests dwindle and ships, laden with charcoal cargoes, leave Mombasa for the Middle East.

Thus, the wildlife and natural environment of Kenya are in jeopardy. According to a Czechoslovakian zoologist, 127 species of wildlife have already become extinct in this country. Possibly hundreds more are threatened. It will be remembered that the Quagga, a common, zebra-like equid, became extinct in living memory—the last specimen dying in a German zoo.

SPECIAL DISPATCH TO WER

## Bavarian Minister Downgrades "Friendly" Sources of Energy

**MUNICH**—Bavarian State Secretary for Protection of the Environment, Alfred Dick, has called for a more rational use of existing energy sources because highly publicized new sources—solar, wind, or earth—will not be available to any practical extent in the near future.

Dick recently told a symposium on environmental protection in Augsburg that present raw material energy sources should be conserved and efforts made to reduce their noxious effects on the environment.

So-called "environmental-friendly" sources such as sun, wind, and earth simply will not be available in the next 30 years, he said.

In analyzing solar energy, Dick noted that to produce electricity equal to the output of a 2,600 mw. nuclear power plant it would be necessary to cover an area of about 61 square miles with solar heat collectors. He also said that in certain climates solar energy was more promising for heating water than for other energy uses. Nevertheless, it is hardly expected to significantly reduce the load on present sources of electrical power, he said.

Prospects for wind energy were even less promising, Dick declared. Although the first experiments for wind-produced electricity began 80 years ago, today's high investment costs and erratic availability of wind have prevented any large-scale use. Current research in this field holds forth no rosy prospects, the State Secretary said.

Harnessing the tides—as France has done in Brittany—is simply not feasible in Germany, Dick declared, because the highest tide of 16 feet along the German coastline does not offer the necessary conditions.

Dick did comment that some areas in Germany could conceivably be tapped for "earth heat"—such as dormant volcanoes and thermal sources. But even so, he added, these could not be expected to make any significant



impact upon this country's energy consumption pattern.

In summation, Dick said that the more esoteric sources—often publicized—such as use of glacier melting, the Gulf Stream, or the rotation of the earth were hardly more than theories at present.

WILLIAM G. MAHONEY

## New Soviet Plan May Divert Arctic Rivers to Central Asia

*NEW YORK*—The new Soviet five-year plan (1976-80) calls for a start on a highly controversial project that would divert the flow of some rivers from the Arctic Sea to irrigate the potentially rich desert land of Central Asia.

The plan—reported by Tass, and which has aroused concern among Western scientists—aims at correcting a geographical and geological “fault”: All the rivers of the Siberian watershed flow northwards to the Arctic, and thus none of Siberia's rain and snowfall is of benefit to the parched lands of the south, such as in Kazakhstan where the soil is potentially promising.

Recent agricultural disasters in the Soviet Union have lent urgency to reclaiming the land to the south. Statisticians have reported that the acreage of arable land per head of population is actually declining. Western ecologists, however, have claimed that a reduction in the volume of water flowing into the Arctic could change the environmental balance and might even result in a southern extension of the ice cap.

Although actual work on the project is not immediately envisioned, the new five-year plan has called for funding the project. Two plans under consideration involve the Ob, Irtysh, and Tobol rivers—the latter two are Ob tributaries—which lie just beyond the Urals in Western Siberia. The rivers involved are the closest to the Kazakhstan and Aral and Caspian Sea depressions where the water shortage is most serious.

The first plan would construct a 1,500-mile canal from the confluence of the Tobol and Irtysh rivers, crossing the Siberian watershed at its lowest point just east of the Urals southern foothills, past the Aral Sea into the Kyzylkum and Karakum deserts. It would divert about 50 billion tons of water a year—enough to irrigate about 10 million acres of agricultural land.

A second project calls for construction of a branch off the northern end of the canal to divert water over the southern Urals into the Ural River basin to irrigate the area north of the Caspian Sea.

In both projects, where water has to be pumped up over the Urals, the pumping stations would be powered by hydroelectric stations driven by the water as it poured down the south side.

Although the present five-year plan approves the projects in principle, the combination of environmental opposition and the vastness of the entire endeavor means that work will not begin for years, probably not until the 1990s.

## IAAE Chief Says Nuclear Energy Poses No Threat to Environment

*RIO DE JANEIRO*—On his arrival here, in late September, for the 20th Conference of the International Agency for Atomic Energy (IAAE), the organization's director-general, Sigvard Eklund, rebutted charges that nuclear energy posed a threat to humanity and said that, on the contrary, it was more compatible with the environment than natural energy.

Addressing a news conference, Eklund said he was “convinced that the production of nuclear energy is much more favorable to the environment, to the fauna and flora, than other means of producing energy.

“A hydro electric station,” he argued, “is much harder on nature because of the need to build dams and flood valleys. Besides, statistics show that every ten years, at least one big dam bursts. In the last ten years, two of them burst open. You could even say that nuclear energy is very friendly with nature.”

The Swedish-born director-general of the IAAE said that by the end of last year there were 180 nuclear plants in the world, which amounts to an accumulation of more than a thousand nuclear reactor years of experience. Some of these reactors have been operating for more than 20 years, without any serious accidents.

“The accidents that did occur,” he stressed, “were in the non-nuclear components, and that represents an absolutely impressive level of security.”

Eklund said that nuclear energy now accounts for five per cent of the electricity produced throughout the world. Judging by projects underway, by 1980 this figure should double to 10 per cent and then again to 20 per cent by 1985. By the turn of the century, nuclear power should provide about half of the world's electricity.

Even while showing great faith in the future of nuclear energy—“the process is irreversible” was one of the quotes—Eklund admitted there are dangers, both in the sanctioned use of nuclear power and as it relates to its use by “undue” means and persons. He said the agency is continuously working to improve its safety mechanisms.

“But looking around,” he concluded, “one finds the need for security in every human activity. Society has changed and become very vulnerable to attacks. We have to protect ourselves and there are no exceptions for nuclear plants.”

Like most international meetings in the last two years, the IAAE Conference will have to cope with a certain amount of political turmoil. Along with the questions of the admission of The Palestine Liberation Organization and the expulsion of South Africa, there is also controversy over the fact that the conference is being hosted by a country—Brazil—that did not sign the Nuclear Non-Proliferation Treaty, and, to top that, has just ordered a multi-billion dollar nuclear project from West Germany—against great opposition from the United States.

G. HAWRYLYSHYN



## In Brief...

### British Commission Advises Slowdown on Nuclear Energy

The Royal Commission on Nuclear Energy has advised the British Government to go slow on developing nuclear energy and that expansion of the existing capacity "be postponed as long as possible."

Headed by the distinguished physicist Sir Brian Flowers, the 17-member Commission urged that Britain not commit itself to a plutonium economy "unless it is clear that the issues have been fully appreciated and weighed." The report stated that the Commission was not satisfied that Government had taken into account all the implications of nuclear power, and recommended that an environmental impact statement be prepared before Britain embarked on a major nuclear program.

The report is expected to set back advocates of an expanded nuclear capacity for Britain, but it should come as no surprise. Sir Brian himself disclosed earlier this year that the Commission would take a negative view of nuclear power (*WER*, July 19, p. 1).

The Commission's stand followed by only two days Sweden's national election that toppled the ruling Social Democratic Party from power after 44 years. A major issue was the party's support of an expanded nuclear energy program. The victorious Center Party candidate, Thorbjorn Falldin, promised not only to halt construction of new nuclear stations, but dismantle existing ones.

### Hong Kong Seeks To Control Noise From Ventilators

The Secretary for the Environment in Hong Kong has recently proposed new provisions to control noise from ventilating systems. According to A.T. Armstrong-Wright,

excessive noise from ventilating systems, including air-conditioning units, has been the subject of many public complaints. Although these have been considered at length by the Advisory Committee on Environment Pollution, a government body, thus far the existing legislation has not provided a satisfactory means for coping with this type of nuisance. Under the new legislation, ample time will be given for excessively noisy ventilating systems and air conditioners to be corrected, but failure to rectify such nuisances within a required period of time will be a punishable offense.

### Conservationists in Colombia Debate Cayman Skin Exports

The Colombian wildlife service Inderena is under attack by local conservationists for authorizing export licenses for the skins of 290,000 caymans this year. Over one million caymans were killed in 1975, according to Inderena statistics.

Alberto Donadio, local representative of the International Union for the Conservation of Nature (IUCN), has taken strong issue with Inderena director Julio Carrizosa on the size of the cayman population in Colombia.

Related to the family of *Alligatoridae* and similar to the crocodile, the cayman lives exclusively in Central and South America. Colombia's crocodile population, now reduced to only 280, is on the endangered list of the World Wildlife Fund. The cayman will suffer a similar fate, said Donadio, unless hunting and export licenses are revoked.

Inderena based its approval of licenses on an estimated cayman population of three million and on regulations limiting the killing of caymans to animals over 4.8 ft. in length.

Donadio maintains that Inderena has never produced scientific studies on the country's cayman population and that the figure of three million is highly inflated. He also cites a series

of export registrations approved by Inderena in 1974 and 1975 for cayman skins smaller than the legal limit.

According to Donadio, Carrizosa is following the same policy as his predecessor, Daniel Gonzalez, who in 1971 authorized the killing of 500,000 Amazon tortoises (*Podocnemis expansa*) although they were and are on the endangered list of the IUCN. The quota was never fulfilled because of the scarcity of tortoises.

The Colombian Society of Ecology has joined the dispute by claiming that there are only 500 caymans in the areas of the country where Inderena has issued hunting licenses. Carrizosa has responded by demanding that the society produce scientific proof of its claim.

"Meanwhile," he said, "we will continue our efforts to export wild animal skins."

### Mexican Ecologist Urges Control of "Urbanmania"

Mexico City is gobbling up the surrounding countryside in an unplanned "urbanmania" which must be controlled, the president of the Mexican Academy of Ecology Law, Ramon Ojeda Mestre, recently warned. Urgent steps toward "rational urbanization" must be taken to counteract the situation, he said.

In the last 39 years, Mexico City has annexed more than 67,000 acres of rural land, and by 1980 another 17,000 acres will be absorbed because of demographic pressure, the academy president said.

A study by the Department of the Federal District (Mexico City) showed that in 1936, when the last collective farm land in the area was given to farmers by the government, there were 103,000 acres divided among 96 collective farms. In 1974, only 67 farms totaling 77,600 acres were registered with the government and figures this year show that Mexico City now encompasses 185,250 urban acres and 181,000 rural acres.



## Great Barrier Reef is Being Destroyed, Australian Says

As much as a third of northeastern Australia's unique Great Barrier Reef has been destroyed, according to Dr. Peter James, a Brisbane environmentalist, researcher, and engineering geologist. He also charges that efforts to save that coral from starfish invasion were hindered by the Queensland government, which he said had refused to adopt effective control measures when the danger was discovered eight years ago.

Dr. James, who now works for a Brisbane civil engineering company, started investigating the slow demise of the Great Barrier Reef several years ago while doing research at the University of Queensland.

After detailed sifting of documented evidence, Dr. James surmises that vested oil interests may have hoped for a devastated reef so that conservationists would have less to oppose and little to save.

## France Experiments With New Desulphurization Process

France's oil research agency, Institut Francais de Petrole (IFP), has teamed up with the government-owned Electricite de France (EDF) to build a demonstration installation at Champagne-sur-Oise near Paris for testing its stack-gas desulphurization process. The aim of the IFP process is to prevent any pollutant discharge during the combustion of crude-oil or coal residues in factories and to recover sulphur in an easily storable and non-polluting form.

The six-month industrial testing campaign—supported by the Environmental Protection Fund, the Aid to Development Fund, and the Hydrocarbon Support Fund—showed that the stack-gas desulphurization rate was higher than 90 per cent, that the sulphur was of good quality, and that the unit was flexible and well adapted to operational varia-

tions in an industrial complex.

IFP, which has researched this process in cooperation with Japanese and American industrialists, has sold the license to various countries that have large coal reserves.

## Peabody Coal Liquidates Its Assets in Colombian Fields

Colombian Mines and Energy Minister Jaime Garcia has announced that Peabody Coal Co., a Kennecott subsidiary, has begun liquidation of its assets in the Cerrejon coal fields on the Guajira Peninsula of northeastern Colombia (*WER*, Sept. 27, p. 3).

According to Garcia, Peabody refused to accept new conditions set by the Colombian government for exploitation of the high-energy, low-sulphur fuel.

Peabody had signed a preliminary exploration contract in 1972 for 25,000 acres, one of three interconnecting fields totalling 200,000 acres. As a result of the breakdown in negotiations, the Peabody fields will pass to Carbocol, the state coal agency.

Meanwhile, Intercol, the Colombian subsidiary of Exxon, has obtained an association contract with Carbocol to exploit 105,000 acres of the Cerrejon deposits. Garcia stated that Intercol had offered the best terms for the contract in international bidding last January.

## Greater Precautions Against Disasters Urged in Manila

The Philippines should have more effective disaster control measures. That was the recommendation of various scientific experts who recently gathered in Manila for a five day international conference on human survival. They said recent disasters which had hit the Philippines—mainly the earthquake and subsequent tidal wave that killed an

estimated 8,000 people—made increased precautions necessary. Recommendations were for the establishment of warning systems in areas susceptible to disaster, increased research into earthquake prediction, an expansion of the flood control program, and more research into moderating typhoons.

The President of the Philippines, Ferdinand E. Marcos, also spoke at the conference. He called for the reform of the world's consumption habits, whereby 82 per cent of the available energy and water resources of the world are being used by only 33 per cent of the world's population. He also said that the developing countries must learn from the mistakes of the richer ones: "If they learn enough from the mistakes of the more advanced countries, then they will not have to fight their own losing wars against the high polluting automobile, the non-disposable plastic bag and pop bottle... nor will they be adding any unnecessary amount of heat to the air they breathe or the water they drink from excessive energy consumption."

## Rio de Janeiro Enacts First Garbage Dumping Legislation

The city of Rio de Janeiro has recently enacted Brazil's first pollution legislation creating fines for dumping garbage, even pieces of paper, anywhere in the municipality.

In announcing the decree, Mayor Marcos Tamoyo said it is patterned after that found in many American cities. The fines range from \$27 to \$1,525. (In Brazil, \$27 is a stiff fine as it is almost half of the monthly minimum salary, and about half of the labor force only makes the minimum salary.)

Seventy-two garbage inspectors were appointed to enforce the decree but the mayor said their first task will be to carry out a "clean-up" campaign and make people conscious of the need for the decree. The fines will be levied only as a last resort.



## Cape Hunting Dog Nearly Extinct in South Africa

The Cape Hunting dog (*Lycan pictus*) appears to be seriously threatened with extinction in southern Africa, according to a study now being carried out with World Wildlife Fund support.

Allen Reich of Yale University reported that only about 260 dogs are to be found in the 182,000 square kilometer Kruger National Park, which is now their main stronghold.

In the Kalahari Gemsbok Park (9,000 square kilometers) only one pack survives, but appears doomed. The pack numbered eight, but two were shot by stock breeders when the dogs left park confines. During an effort to tranquilize the dogs to get them back to the park, one female died and another—the only remaining female—suffered a hind leg injury.

The International Union for Conservation of Nature and Natural Resources (IUCN) has recommended that the dogs should have full legal protection and any control measures be carefully supervised.

## Nations' Payments to UNEP Called "Encouraging"

During the first five months of 1976, payments of contributions to the UN Environment Fund have totaled \$11,275,744. Of this amount, nearly \$7 million was towards 1976 contributions, while the balance represents payments of arrears for the preceeding two years. These payments, early in the year, said the United Nations Environment Programme (UNEP), "are encouraging."

UNEP also announced that the governments of Australia, Austria, Canada, Finland, Netherlands, Spain, Switzerland, and the Soviet Union each deposited contributions during this period equivalent to more than \$100,000.

At its fourth session, UNEP's Governing Council discussed the Fund's financial situation extensively, and, among other decisions, appealed to governments which have not previously pledged funds "to do so generously within their capacities." The council also urged governments which have announced pledges to pay them fully and promptly.

## Malaysia Approves Plan To Deal With Oil Spills

The Malaysian government has recently approved in principal an \$8 million contingency plan to deal with oil spills and other possible pollution in the Straits of Malacca. Abdul Kadir Yusof, the Minister of Law, reported that under this plan centers would be set up in Johore Bahru, Port Klang, and Penang. In addition, equipment to deal with oil spills and pollution would be stationed at those centers and be manned by trained staff. He also pointed out that the main objects of the plan were to develop adequate clearing up capability in the event of an oil spill, to mitigate its harmful effects on aquatic and marine environment, and to prevent or control such spills.

At present, some 150 ships traverse the Straits daily, most of them foreign vessels. Therefore, Yusof suggested that the main users—the big shipping companies and countries—should contribute to the provision and maintenance of the equipment to deal with oil spills in the Straits.

## Calendar...

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden, WHO.

**October 27-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.

**November 9-11**—Fifth International Pollution Engineering Congress. Anaheim, California. Contact: Clapp & Poliak, Inc., New York City.

**November 14-19**—International Symposium on Industrial Wastes and Environment, Caracas. Auspices of International Association of Medicine and Biology of Environment.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva, WHO.

**December 13-17**—Working Party on Housing (6th Session). Geneva. ECE.

**December 16-18**—Inter-Governmental Consultative Committee on Environmental Problems of Specific Industries. Paris. United Nations Environment Programme.

**December 20-23**—International Conference on Bicycle/Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.

**January 18-21**—UNEP/FAO joint Seminar on Residue Utilization: Management of Agricultural and Agro-Industrial Wastes. Rome.

**March 29-April 1**—Seminar on the Petroleum Industry and the Environment. Paris. UNEP.





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## Atmospheric CO<sub>2</sub> Called World's Gravest Environmental Problem

WASHINGTON—The major environmental problem facing the world today is the dramatic increase in the carbon dioxide content of the atmosphere, according to a report submitted by the prestigious Scientific Committee on Problems of the Environment (SCOPE) to its parent organization, the International Council of Scientific Unions.

Presented to a meeting of the Council's general assembly earlier this month at the National Academy of Sciences, the report cited studies that show a projected four- to eight-fold increase in CO<sub>2</sub> concentrations during the next 200 years. Because many scientists fear that this could bring about severe climate changes, the report calls the trend "rather alarming." (From 1900 to 1974, CO<sub>2</sub> emissions to the atmosphere increased 900 per cent, from 2,000 million tons per annum to 18,000 million tons.)

The 296-page report—Environmental Issues 1976—was prepared by a group of scientists from various countries headed by Dr. Victor A. Kovda, a soil scientist at Moscow University. It was edited by Dr. Martin W. Holdgate, head of research in Britain's Environment Department, and Dr. Gilbert F. White, Director of the Institute of Behavioral Sciences at the University of Colorado.

The report emphasized the critical importance of monitoring on a global scale as a prerequisite to understanding the extent to which trends in the environment and of man's impact on it create risks. But it expressed "disappointment" that a comprehensive monitoring system envisaged by the UN Conference on the Human Environment (Stockholm, 1972) has not been translated into reality.

The report makes a series of recommendations for future research that will serve as guidelines for scientists around the world over the next few years. They include:

1. Studies designed to advance understanding of natural cycles and their transformations, particularly of carbon, essential plant nutrients, and potentially toxic substances.

2. Studies of relationships between exposure and response of organisms to levels of potentially toxic substances.

3. Research related to food production.

4. Development of rigorous and objective methods for environmental impact and assessment.

5. Study of man's impact on climate and climatic influence and constraints on human activity.

6. Research on the effects of population growth and development on renewable and non-renewable resources.

7. A concerted approach to environmental education within the context of improving communication between scientists and policy makers.

During the discussion of the report, several scientists expressed concern that the scientific community was not able to make its views known to policy makers in government on important issues. Others stressed the need for scientists to communicate their views directly to the general public so that there would be public support for actions required to deal with some of these problems.

Dr. White told *WER* that communications is one of the purposes of the report. "It's going to make the world scientific community and policy makers much more sensitive to some of the key environmental issues which have not received much attention such as the problems of basic changes in the biochemical cycles." W.B.

## Two-Country Effort Insures Clean Water Again for Mexicali Valley

MEXICALI, Mexico—The once-lush Mexicali Valley, just across the southern borders of California and Arizona, is on its way to full agricultural production again after a dozen years of soil-destroying salinity.

In what could be a textbook example of the results possible thorough international negotiations, perseverance and hard work, the governments of Mexico and the U.S. are constructing massive public works to insure that Colorado River water entering Mexico is of the same

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high quality as that now used by farmers in the Imperial Valley of California and in Arizona.

As one of his last official acts before leaving office Dec. 1, Mexican President Luis Echeverria formally inaugurated a final phase of the project on the Mexican side in this California-border city: the levelling and anti-salination treatment of 40,000 acres of land to return them to production. Eventually, a total of one million acres will thus be treated and reactivated for agricultural use.

Negotiations with the U.S. on this ambitious project began in 1962, amid growing concern over the quality of water entering Mexico. In 1965, despite U.S. construction of a run-off canal for saline waters, a high salt content nevertheless remained in the waters destined for agricultural use on the Mexican side of the border. Then further agreements signed in August 1973 included U.S. commitments to pay the costs of additional run-off canals; to provide technical assistance to the Mexican projects; and to support Mexican searches for financing of its share of the project.

To date, some 217 miles of main canals and 2,266 miles of lateral canals have been constructed to carry off saline water and bring in fresh water from the north. One hundred eighteen new water wells have been drilled, and 265 existing wells, contaminated by salt, have been treated and renovated.

KATHERINE HATCH

## Urban Planners in Argentina Fight Use of Zoo Land for Apartments

**BUENOS AIRES**—A municipal plan to use the land now housing the local zoo for apartment buildings—Argentina's current housing deficit is 2.4 million units—is under fire from several Argentine architectural and urban planning organizations.

Such a plan, says the Central Society of Architects, will reduce the already low ratio of park land per capita. "Buenos Aires currently has a ratio of 3.3 square yards of recreation parks. This low ratio is totally unacceptable according to any urban theory trying to provide healthful life," the Society statement added.

The minimum ratio should be between 8.4 and 14.4 square yards, the architects claimed. Separate protest statements have been issued by the Center of Argentine Landscape Architects and the Argentine Planning Society.

Municipal plans call for moving the animals on the 44.5 acre zoo to another public park because the current zoo is too small "to maintain the animals exhibited there according to the minimum conditions counselled by experts," said a municipal communique. The city pledged that the land would not be divided "irrationally or irresponsibly."

Currently, Buenos Aires—with a population of nine million—has 2,223 acres of recreational parks. The municipality says it is organizing a plan to eventually increase this to more than 6,000 acres.

AGOSTINO BONO

## Australian Conservationists Claim Their Work Impeded by Lack of Funds

**PERTH, Western Australia**—Conservationists here, who are being starved for funds, are blaming their hard times on the antipathy of conservative government and big business, and fear their programs will be set back at least ten years, including the shelving of three important court cases, drastic cuts in staff, and a cutback of material distributed to the public.

As Dr. Geoff Mosley, director of the 8,500-member Australian Conservation Foundation (ACF), says: "We have to get money quickly or the whole conservation movement will go out the window." From 1970 to 1975 the "big companies" had supported his and like organizations. "They kept us alive with big donations," Mosley says, "but when we went back to them recently asking for more, most dropped out. Perhaps we aren't fashionable anymore."

Dr. Mosley blames the Federal Government for its recent budget decision demanding that the conservation and environment movements raise \$1 for every \$2 provided by the Government. John Hibberd, the Nature Conservation Council's executive secretary in New South Wales, believes the Federal Government is deliberately forcing the conservationists out of existence. The Council represents 50 organizations with a membership of 68,000.

Conservationists in all regions of Australia echo these allegations. Local governments, however, counter by pointing out that austerity has become the national norm during the cleanup period following the "profligate" administration of deposed Labor Prime Minister Gough Whitlam, under whom conservation movements had easy access to federal funding.

DON LIPSCOMBE

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## Special Report: UNEP Holds Motor Vehicle Seminar in Paris

PARIS—Both highly industrialized and developing countries face a raft of problems in providing mechanized mobility while attempting to conserve environmental quality, but these problems are probably more acute for the developing countries. This unexpected viewpoint was expressed by delegates representing motor vehicle manufacturers and labor, and government and international organizations who attended the Motor Vehicle Seminar (MVS) held in Paris earlier this month under the auspices of the United Nations Environment Programme (UNEP). The attitudes of the delegates were compiled through use of a written questionnaire.

According to the MVS interim report, many large cities in some of the developing countries face some of the most acute congestion and pollution problems because populations there are likely to double before the end of the century, and motor vehicle registrations to triple. Although these cities may have fewer vehicles per capita than those in industrialized countries, their high population density results in greater concentrations of vehicles.

Taking the example of Brazil, the report observes that if the country as a whole has only one vehicle for 61 people, Sao Paulo, its largest city, has one car for six people, which is exactly the same ratio existing in New York City. Moreover, the report claims, large cities in developing countries often have as much vehicular traffic as most cities in developed countries, albeit with inferior urban road systems.

**High Concentrations**—Among cities with high motor vehicle concentrations are Abidjan in the Ivory Coast, which has 70 per cent of the country's motor vehicles for 12 per cent of its population, Bangkok which has 72.8 per cent for only 7.9 per cent, Bogota with 35.6 per cent for 11.6 per cent, Bombay with 14.5 per cent for 1.1 per cent, Caracas with 36.1 per cent for 19.3 per cent, Jakarta with 36.6 per cent for 3.8 per cent, Nairobi with 59.4 per cent for 4.7 per cent, Sao Paulo with 25.8 per cent for 6.1 per cent, and Teheran with 49.1 per cent of the total number of vehicles compared to only 10.8 per cent of the country's population.

Whereas environmental quality and pollution levels are improving in many industrialized cities, they are frequently degenerating in the larger cities of the developing world, the delegates claimed. In some countries, accidents compete with disease as major causes of death. With quite different mixes of traffic, different standards of maintenance, and different public awareness and sensitivity to traffic, the experience of the most industrialized countries may not be of direct help to the developing countries.

The report noted that, with a few exceptions, the developing countries have followed the same route as the industrialized nations by encouraging the use of the private motor vehicle. Only recently have authorities in these countries realized the need to establish transporta-

tion policies which integrate and enhance the overall objectives for social, economic, and urban development. At least one country, the People's Republic of China, has even decided that in its present situation the private motor vehicle has a negligible role to play in the transportation system.

"Possession of a motor vehicle has become and remains in many countries a major aspiration of large proportions of the society, and an aspiration which has become a reality in the industrialized countries," the report said.

**Vehicle Ownership**—According to projections made in 1972 by the Organization for Economic Cooperation and Development (OECD) in Paris, which may now be highly exaggerated in view of the changed economic circumstances, non-OECD countries could be expected to increase their vehicle ownership from 17.7 million in 1970 to 24.6 million in 1975, 59.3 million in 1985, and 117 million in 1990. In the same period OECD countries would only show increases of 214.1, 313.2, and 406 million from their 1970 level of 64.3 million to 85.4 million in 1975, 126.4 million in 1985, and 169 million in 2000.

Answers to the questionnaire regarding air pollution indicated that the motor vehicle was a serious source of air pollution only in the more densely populated urban regions and in the vicinity of main highways. Motor exhaust was the major contributor to carbon monoxide levels and to a lesser extent to hydrocarbons, and accounted for up to 60 per cent of nitrogen oxide levels. It also contributed suspended particulate matter levels, polycyclic aromatic hydrocarbons, aldehydes, airborne lead and aerosol sulphates, as well as odors. Under certain meteorological and other conditions, the hydrocarbons and nitrogen oxides might react to the atmosphere to give photochemical oxidant air pollution.

**Pollutants**—The report notes that if ambient concentrations of some pollutants such as carbon monoxide and hydrocarbons have been levelling off or even decreasing with the application of control techniques and the saturation of traffic in many cities, in most countries the level of photochemical oxidants has not only been increasing, but covering wider areas. Any region situated between the latitudes 60 north and 60 south which had any significant sources of nitrogen oxides and hydrocarbons from dense traffic could not expect to remain totally free of oxidants at least in some periods of the year.

Delegates agreed that as far as existing or envisaged regulations were concerned, the UN/Economic Commission for Europe regulations represented the most appropriate cost-effective and probably the best cost-benefit approach, when supplementary costs of running and maintaining vehicles are taken into account. As for the



regulations limiting the lead content of motor vehicle fuel which were to be introduced in several countries as a means of reducing emissions of lead, the 1973 increase in oil prices has retarded their implementation.

**Noise**—According to the report, traffic noise is now causing as much concern as air pollution because of its rapid spatial and temporal growth. The OECD estimates that more than 50 per cent of city residents could be exposed by 1980 to excessive noise defined as more than 70 decibels (dbs) during at least 10 per cent of the time.

The report concludes that reductions of two to four dbs and six to ten dbs should be possible for private cars and diesel trucks, respectively, by enclosing the engine in highly dampening material. It has been estimated that a cut of four dbs would add three per cent to the cost of private cars and less than one per cent to the cost of heavy trucks or buses. With basic changes in the design of the engine, an overall cut of about 10 dbs could be achieved. Recent estimates suggested that reducing the noise from heavy vehicles to 80 dbs (measured at 15 feet) would add \$180 to the cost of a medium-duty gasoline powered truck and \$850 to the cost of a medium-duty diesel.

Delegates remained divided as to whether the building of urban highways diverts traffic or actually increases it, but in most industrialized countries there are growing pressures to limit the use of the private motor vehicle in the cities and invest more in urban transport.

**Recommendations**—Noting that the private motor vehicle is used in cities essentially for commuting purposes, the report suggests encouragement should be given to walking and cycling, rush hours should be reduced through staggering working hours and dispersing business activities, access to the city center by car should be reduced and parking there restricted, and the pooling of vehicles for commuting encouraged.

In the long-term, the report summed up, spark ignition and diesel engines will almost certainly be replaced by less polluting power generators with better thermodynamic efficiency. Among types under active review are the stratified Stirling and Brayton cycle (gas turbine engines), and hybrid units and electric power generators. But for the moment, the report recommends reduction in the size of motor vehicles (average mass of the American car is double that of one in Europe or Japan) and designs that reduce aerodynamic drag.

MICHAEL PARROTT

(A concluding report on the seminar will appear in the next issue.)

## Japan Seeks Methods To Dispose Of Mounting Residues of Gypsum

**TOKYO**—A special committee organized by Japan's Ministry of International Trade and Industry (MITI) has promised to come up with recommendations shortly on ways to dispose of waste gypsum left over from industrial desulfurizing processes. MITI authorities recently es-

tablished the committee when it was realized that such gypsum residues were mounting steadily because of a sharp increase in smoke-treating facilities to prevent air pollution.

Most of the artificially-manufactured gypsum is valueless to Japanese industry, mainly because the quality of naturally-produced gypsum available in this country is high and the quantity is almost sufficient to meet domestic demand. During fiscal 1975, a period which ended last March, the combined total of natural and artificially produced gypsum exceeded 4.4 million tons. After subtracting that amount of gypsum needed locally, more than 400,000 tons of the product were deemed superfluous.

According to MITI statistics, by the end of fiscal 1977 the combined supply of gypsum is likely to top 5.8 million tons. At the same time, apparently, national demand in Japan is not expected to total much more than 4.3 million tons. The excess of 1.5 million tons of gypsum, if allowed to accumulate, could cause widespread pollution of the environment. However, some officials of the Japanese Construction Ministry feel the problem posed by the excess supply may be eventually resolved by the development of a new type of wool gypsum board using desulfogypsum instead of cement, which is the major raw material for wood wool cement board.

A.E. CULLISON

## European Convention Argues Limits On Liability for Oil Pollution

**DUBLIN**—Representatives of nine north-west European countries, including Ireland, will try again in December to reach agreement on liability of oil companies for accidental pollution arising from offshore exploration.

The drafting of an international convention has been under consideration for the past three years, during which time countries have either set their own upper limits for liability or have relied on a voluntary agreement amongst 30 oil companies which provides for a maximum payment of \$16 million per incident.

Last October talks broke down when the countries failed to agree on whether there should be an upper limit to any compensation payments and since then, the matter has been under investigation.

In discussions at the international conference last year Britain came out in favor of a liability limit of \$25 million. Environmentalists regarded this as too low and claimed it was geared to the large concentration of insurance business in London, which would be hit hard by major claims.

Norway took the other extreme by seeking an open-ended agreement with no upper limit. The Irish delegation did not stand on a particular figure at the time, but the Minister for Industry and Commerce, Justin Keating, has since required a \$75 million limit in the new offshore licenses.

TOM MacSWEENEY



## British Chemist Says Heavy Metals May Be Cause of Fetal Poisoning

LONDON—The possibility that "heavy metal" pollution could be poisoning babies while they are still in the womb has been suggested by a prominent British scientist, Professor Derek Bryce Smith, head of the Department of Organic Chemistry at the University of Reading.

Speaking at the annual meeting of the British Association for the Advancement of Science held last month, he said that he and co-workers had found "grossly high levels of the toxic heavy metals lead and cadmium in the tissues of 40 per cent or more of stillborn babies so far examined."

The professor stressed that this did not indicate a cause and effect relationship between heavy metal pollution and stillbirth but suggested the need for further research into the possible association.

"The last thing I want to do is to alarm people into thinking they are being systematically poisoned by wicked industrialists," he said. "I want to alarm the industrialists, but it seems impossible to do this without bringing things to the attention of the general public first."

Professor Smith, who has been campaigning about the possible dangers of lead and other heavy metal pollutants for several years, said his department was collaborating

in the examination of stillbirth tissues with one of Britain's leading authorities on lead toxicity, Dr. Tony Waldron of the University of Birmingham.

Thus far, the bone and cartilage from between 50 and 60 stillbirths from the Birmingham area has been tested. Some of the babies who had had abnormal brain development also showed low levels of the essential nutrients calcium and zinc in their tissues. "These low levels may exacerbate the toxic effects of lead and calcium on the developing fetal brain," the professor added.

"The findings might explain why hydrocephalus and other brain defects appear to be more common in soft water than hard water areas, for soft water is low in calcium and often high in lead from lead water pipes," he said.

"These brain defects causing death of the fetus seem likely to be the tip of the iceberg. Other less severely affected babies may be born alive, but grow up with more subtle brain disorders which are never recognized as such, still less attributed to exposure to toxins in the womb.

"Several independent groups of workers in the U.K. and U.S. have recently reported an association between moderately elevated blood levels in children and hyperactivity or mental retardation," the professor said.

ALAN MASSAM

## Business Executives, Foreign Officials to Discuss World Environment Issues in New Organization

A new organization which brings together business executives with top foreign officials and experts to discuss global environmental problems will be inaugurated in New York in January.

The organization—International Environment Forum—is sponsored by the Center for International Environment Information, publisher of *World Environment Report*.

In announcing the establishment of the Forum, Arthur Reef, Vice President of AMAX and Chairman of the Center's Advisory Committee, stressed that "it is designed to help major multinational corporations deal with fast-moving environmental developments in foreign countries and at the international level."

Charter members of the Forum already include Procter & Gamble, Texaco, Aluminum Company of America, ITT, AMAX, and the Edison Electric Institute.

The Forum is being created in response to the need for information on international issues that affect the operations of companies in fields such as energy

production, mineral extraction and processing, chemicals, pulp and paper, automotive, food and agriculture, and manufacture of pollution control and monitoring equipment.

The Forum meets five times a year for half-day workshop/briefings conducted by senior environmental policy makers and experts from foreign governments, such inter-governmental organizations as the Common Market, the Organization for Economic Cooperation and Development (OECD), and the United Nations.

Subjects to be covered will vary with developments and the interests of members, but include the worldwide trend toward environmental impact statements, environmental regulations and enforcement in various countries, what lies ahead in Latin America, Asia, Africa, and Europe.

A committee headed by Miles O. Colwell, M.D., Vice President, Health and Environment, Aluminum Company of America, advises the Forum on speakers and programs.



## In Brief . . .

### Mexican Scientists Improve Earthquake Warning System

Geophysicists at the National Autonomous University of Mexico in Mexico City say that they will soon be able to predict earthquakes in this earthquake-prone country. Although the tremors obviously cannot be avoided, enough advance notice will be available to effect evacuation.

Luis del Castillo Garcia, chief of exploration in the university's department of geophysics, said a national network of "seismological observatories" is being created, with an adjunct network of underwater seismological observatories to follow. Some 90 per cent of Mexico's earthquakes are generated from the Pacific Ocean, he said, including the massive quakes of 1908 and 1962 which severely damaged the port city of Acapulco.

A study of the shifting plates of the earth permits earthquake prediction, he said. Eventually, it may be possible to know a year in advance of a particularly strong tremor and where it probably will occur. The geophysicist also pointed out that while Mexican seismologists accurately recorded the subtle shifting of plates that later caused the recent violent earthquake in China, the Chinese, for all of their earthquake studies, apparently failed to predict it.

### British Report Recommends Chemical Plant Licensing

There are hundreds of high-risk chemical processing plants in Great Britain requiring special licensing, according to a report published last month by the government's Health and Safety Executive.

The report was issued by a special committee, chaired by Professor Bryan Harvey of Aston University,

Birmingham, which was set up by the Executive following the explosion at the Flixborough chemical works, Lincolnshire, in June, 1974. Twenty-eight persons were killed in the accident. Since then, says Harvey, "We have set out a framework for British industry to put its house in order. And we have spread the net wide."

The Harvey report defines two major threats from chemical plants: the escape of flammable gases and vapors leading to explosion; and the leaking of toxic materials which could be carried far afield by wind action. Some installations carried both threats, the report noted, and the speed of technological change made it necessary to carry out more research on the dangers of new chemical combinations.

### Luxury Express Buses in Rio Solving Car Traffic Problem

After more than a year's trial, Rio de Janeiro's luxury express buses, called "Frescao" (the "Cool Ones") because they are air-conditioned, are being hailed as a great success.

Recently released statistics show that in January, 1975, the first month of operation, the Frescao service carried 170,000 passengers. At the time there were three routes. In July, 1976, there were 33 lines carrying a total of 1.74 million passengers daily.

The new express buses had been created to encourage motorists to leave their cars home. The poll showed that in the first few months of operation, some 30 per cent of the bus passengers were former car commuters. By July of this year the number had surpassed the 50 per cent mark. Furthermore, it is estimated that the buses have replaced 20,105 daily car trips into town and thus are saving some four million gallons of gasoline a day. All bus routes converge on the downtown area from as far away as 25 miles from the city's center.

The buses are cool, clean, have seating room only, are serviced by

uniformed ticket collectors, stop anywhere they are hailed—but cost three to five times the price of regular buses.

### UNEP Chief Urges Cooperation On Environment in Africa

The Executive Director of the United Nations Environment Programme, Dr. Mostafa Tolba, said that African countries had the capability to cope with environmental problems provided there was regional cooperation and some sort of division of labor arrangements amongst them. He further stated that the Organization for African Unity (OAU), Africa's chief political forum, should provide concrete recommendations on what should be done to protect, preserve, and improve the environment.

Dr. Tolba made these remarks in Nairobi on his return from Addis Ababa, Ethiopia, where he had been on a two-day working visit to the headquarters of the Economic Commission to Africa (ECA).

Subsequent to that visit, an agreement was made jointly between the ECA and UNEP to establish a mission to visit a number of African countries with a view to locating organizations that excel in human settlements.

Explaining the role and function of such centers, Tolba said they would establish a series of studies for the implementation of pilot projects in areas of human settlements on a sub-regional basis under the coordination of the two UN institutions.

Joint pilot projects are already underway in Botswana and Kenya on sewage disposal using local raw materials and simple latrines that do not use water. The Executive Director, who also met with United Nations specialized agencies representatives as well as OAU officials during his visit, said that desertification was one of the most critical problems facing Africa and stated that action must be taken to merge arid and semi-arid land.



## Danish Planners Urged To Erect Windmills for Power

The Danish Ministry of the Environment has told planning authorities to view sympathetically applications for permission to erect windmills to supply electricity and heating on a local basis.

Siting of windmills requires approval from three authorities concerned with preservation of nature, regional planning, and the general environment. The Ministry said it regards windmills favorably because they can reduce pollution from power stations and also reduce the need for ugly overhead cables. It also said that there would be no problem of untoward noise from windmill operation.

A spokeswoman for the planning commission, Jette Eg, said the directive will be mainly concerned with plans to build small windmills for farms, isolated houses, housing development, and schools.

## Offspring of Smoking Mothers Contract More Diseases

Research by physicians of the Medical Academy of Sofia, in Bulgaria, shows that infants born of smoking mothers are afflicted with many more diseases than offspring from non-smoking mothers. Bulgaria is a major tobacco-producing and exporting country.

The Bulgarian Telegraphic Agency (BTA) reported recently that diseases of the respiratory tract are of the highest incidence among these children. Furthermore, the BTA report said the incidence is directly linked to the intensity with which the mother has smoked during her pregnancy period.

The report also stated that smoking's harmful effect on the fetus and the new-born infant sharply increases after the fourth month of pregnancy, when the placental blood begins to circulate. The carbon dioxide smoke invades first the

placenta and then the blood of the fetus, thus partially blocking the hemoglobin. Hence, the intrauterine life of the fetus is somewhat damaged due to constant oxygen starvation, the report said.

## Czechs Clean Up A Polluting Aluminum Processing Plant

For the first time in two decades, fruit trees blossomed and apples and pears ripened in Horne Opatovice, a village in central Czechoslovakia, a national trade union daily has reported.

When an aluminum processing factory was built near Ziar nad Hronom in 1953, nobody had an inkling of the devastation the resultant fluorite, tar, arsenic, and sulphur pollution would bring. Bees died first, then cattle, some trees ceased to blossom and produce fruit, firs disappeared from forests, people suffered from occupational dermatitis and ulceration or perforation of the partition between nostrils. In 1965, a government decree offered resettlement to the local population.

First cut in fluor pollution was achieved in 1965, and when in 1973 the firing of cryolite carbonaceous slag was replaced by a wet method, pollution was cut by 60 per cent. Since then, several new efficient absorbers have been installed and more are to follow shortly. Practically all tar and fluor air pollution is to be eliminated at the cost of \$150 million in the next five-year plan by the reconstruction of primary aluminum production using sintered anodes.

Another source of pollution is the plant's heat-producing system, which continually discharges sulphur dioxide and arsenic into the atmosphere. The cumulative effect of these with fluor has not been sufficiently studied but it is obvious that merely mechanical separation of ashes is not satisfactory. However, the present 130-foot-high chimney is to be replaced by a 650-foot-high one

which should sufficiently disperse and render harmless all gases. Filters for carbon-based fall-out are to be installed next year.

As it stands, nose ulceration cases have already dropped from 25 in 1959 to five in 1975, and to none this year, with occupational dermatitis falling from 14 cases in 1962 to one last year. Decline in other disorders has been similar, the news account claimed.

Concrete examples of industry-caused pollution of such far-reaching proportions are seldom discussed in the national press in Prague and the article reflects increased awareness of air-pollution dangers.

## Britain To Use Wave Energy For Low-Cost Electricity

A wave energy conversion method developed at the Department of Engineering of Lancaster University has been awarded a \$21,500 grant by Britain's Science Research Council.

Thus far, only small scale models have been tested in wave tanks, but the grant will enable larger models to be built. Professor Michael French, director of the project, estimates that if a full-scale model were developed it could generate sufficient energy to meet the needs of a small town of about 12,000 people.

The full-scale model will operate as a giant air pump consisting of a row of 20 parallel hollow beams built of pre-stressed concrete, each supported by a continuous row of partially inflated, rubberized air bags. This entire edifice will be moored to the sea bed so that the ends of the beams face the oncoming waves. Because the air bags are fitted with inlet and outlet valves, the action of incoming waves will compress the air bags and force air through connecting channels in the beams. The resulting accumulated air pressure will, in turn, drive turbines powering D.C. generators connected to the shore, and could provide up to 16 megawatts.

Professor French thinks the most



attractive feature of the method is the low capital cost per kilowatt expected because of the cheapness of the devices used. And because the device has flexible working surfaces and lies parallel to the wave direction, it would be less exposed to damage, yet in rough weather the beams could be submerged and continue to work at full output.

### Argentina Develops Powdered Meat as Rich Food Supplement

The Argentine government is studying the feasibility of developing powdered meat as a protein-rich food supplement. The Secretariat of Agriculture and Cattle-raising has reached agreement with Emilio and Mariano Etchegaray, two brothers who have developed a meat dehydrating process for experimental production of powdered meat.

Because it retains about 85 per cent of its protein, the powdered meat can be stored without refrigeration, according to the Etchegaray broth-

ers, thus overcoming the lack of widespread refrigeration in many parts of Asia and Africa.

### Cleansing of Caspian Sea Will Increase Caviar Catch

Soviet fishing authorities last month provided the world's gourmets with tasty news: the sturgeon supply in the Caspian Sea has increased sharply following anti-pollution measures, which means the caviar shortage should ease.

The Soviet news agency TASS revealed that the 1975 catch soared back up to 25,500 tons and should rise even more in 1976. The report said that plans call for an annual catch of 50,000 tons in the future.

Caviar is the roe or eggs extracted from the female sturgeon. More than 80 per cent of the world's caviar production comes from the Soviet Union (about 350 tons a year) and most of this is from the Caspian Sea.

At the beginning of this century the Caspian catch of sturgeon was about 40,000 tons per year. By 1936,

this was down to 21,500 tons; by 1956 to 15,000 tons; and in recent years totaled a paltry 1,000 tons. Blamed were overfishing, falling water levels, pollution, and construction of dams on feeder rivers.

Concerned Soviet fishing and environmental authorities had mounted a multi-pronged attack on the problem. They slapped sharp curbs on sturgeon fishing. Almost 1,000 water purification stations were installed to eliminate industrial wastes that had contaminated the seabed feeding areas. More water was diverted into the Caspian through experimental underground nuclear explosions in Siberia, TASS said.

In addition, special elevators were erected to carry the sturgeon over the new hydroelectric dams to their spawning areas, but these did not work well. Therefore, experts built a dozen giant fish hatcheries where sturgeon were raised and then fed into the Caspian—up to 100 million small fry a year. Estimates place the Caspian sturgeon at about 200 million now—about the same as it was in the early 1930s.

## Calendar...

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.

**November 9-11**—Fifth International Pollution Engineering Congress. Anaheim, California. Contact: Clapp & Poliak, Inc., New York City.

**November 14-19**—International Symposium on Industrial Wastes and Environment. Caracas. Auspices of International Association of Medicine and Biology of Environment.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva. WHO.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.

**December 13-17**—Working Party on Housing (6th Session). Geneva. ECE.

**December 16-18**—Inter-Governmental Consultative Committee on Environmental Problems of Specific Industries. Paris. United Nations Environment Programme.

**December 20-23**—International Conference on Bicycle, Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.

**January 11-14**—Seventh Session of the Working Party on Air Pollution Problems. Geneva. UN Economic Commission for Europe (ECE).

**January 18-21**—UNEP/FAO joint Seminar on Residue Utilization: Management of Agricultural and Agro-Industrial Wastes. Rome.

**February 21-25**—Fifth Session of Senior Advisors to ECE Governments on Environmental Problems. Geneva. ECE.

**March 29-April 1**—Seminar on the Petroleum Industry and the Environment. Paris. UNEP.





# World Environment Report

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## Canada, EEC Agree on Environment

*BRUSSELS*—Canada and the European Common Market have signed an accord on environmental cooperation and consultation. Signed November 6, the agreement is similar to one already entered into between the EEC and the U.S.

The cooperation will involve exchanges of information and visits at the expert level and regular high level meetings on policy. The subjects included in the first agreement involve evaluation of pollution hazards on human health and the environment, definitions of quality objectives, especially on water pollution, and protection of the natural environment.

Both the EEC and Canada indicated they hope to enlarge the scope of the agreement in the future.

## Strict Toxic Standards Are a Luxury, Indian Scientist Says

*LUCKNOW, India*—The developing economy of South-east Asia cannot bear the cost of the strict industrial toxicology standards now being imposed by affluent western nations, according to Prof. B.D. Nag Chaudhuri, eminent Indian scientist and vice chancellor of Jawaharlal Nehru University in Delhi.

Speaking at a four-day international symposium here, Nag Chaudhuri said the worst dangers in this area's developing nations are the seepage of excess nitrates into drinking water supplies from over-use of fertilizers, and the effects on humans of pesticides. In the anxiety to achieve the green revolution, the meeting was told, many administrators forget the dangers to the population of the chemicals used to increase production.

The meeting was attended by over 100 scientists from 12 countries—Canada, France, Iran, East Germany, Japan, Sri Lanka, West Germany, Sweden, the U.K., U.S., Yugoslavia and Zaire—besides India, which fielded 70 delegates.

The Asian delegates agreed to form an Asian Society for Industrial and Environmental Toxicology headquartered at the Industrial Toxicology Research Center here. The symposium also formed a 10-member committee under Prof. P.F. Holt of the University of Reading (U.K.) to outline priorities in industrial toxicology for the various countries to follow up.

Various speakers underlined the need to involve labor

unions in industrial toxicology research, and covered such topics as the inadequacy of animal experimentation in establishing safe limits for human exposure, and the effects of lead poisoning among smelter workers and pregnant women.

R. SATAKOPAN

## Environment-Cancer Link Now Certain, Experts Say

*LYON, France*—A world authority on cancer told some 250 experts at an international congress here early this month that from 80 to 90 per cent of all cancers can be traced directly or indirectly to environmental factors.

Prof. John Higginson, director of the Centre International de Recherche sur le Cancer (CIRC) made this statement to the Congress on Cancer and the Environment organized here by CIRC and the French National Health Institute. CIRC was founded under World Health Organization auspices and functions with its support.

"We now have circumstantial evidence that from 80 to 90 per cent of all cancers can be traced directly or indirectly to environmental factors," Higginson said. Cancer causes can be divided into basic classifications, he said, endogenous (linked to heredity) and exogenous.

"At least 90 per cent of the exogenous factors are of a chemical nature," Higginson declared.

Other speakers criticized present industrial exposure to vinyl chloride and polychlorides. They also cited statistics showing that over the past 20 years lung cancer deaths of males in the London area dropped, while the death rate remained constant or rose elsewhere in the country. During this same period, London air pollution was sharply reduced as coal-burning furnaces were replaced and less polluting energy sources substituted. This greatly reduced the benzopyrene content of London's air—to one

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tenth the former level, according to one speaker. Benzopyrene, which is found in coal tar and tobacco smoke, has been identified as a powerful carcinogen.

The experts noted that to date 17 substances have been identified as causing cancer in mankind, and 90 others as causing cancer in other animals. They asked how scientists can isolate the few cancer causers among the thousands of substances to which workers and the general public around the world are now exposed.

It was noted, for example, that production of plastic in the U.S. multiplied eleven times from 1949 to 1970 but that only last year did scientists confirm that vinyl chloride causes liver cancer among workers.

U.S. environmental health expert Dr. Samuel Epstein declared that industrial workers are "involuntary guinea pigs."

"They do not know the chemical products they use," he said. "These products are designated by numbers without any indication of their nature. They are not tested before being introduced into the factory."

"It is impossible to determine scientifically what constitutes an inoffensive dose of a carcinogenic substance," he continued. Since it is impossible to ban all substances, it is necessary to determine "an acceptable risk level," he said. But agreement on "an acceptable risk level" is often hard to reach.

For example, in Britain the permissible vinyl chloride level in factory air is now 10 ppm (compared with 300 ppm previously). France is considering a proposal to make the acceptable level five parts. And in the U.S., the acceptable level is only 1 ppm.

WILLIAM MAHONEY

## China's Massive Water Program Said To Assure Good Crops

**HONG KONG**—The water conservancy projects carried out each winter by the People's Republic of China during the slack farming season have been a major factor in China's steadily increasing agricultural output.

More than 70 per cent of China's land area is hilly, and there has been a massive transformation of much of this landscape over the past 20 years. Contour terraced hills have been built wherever possible to provide more cropland, conserve water and reduce erosion. China has built more than 650,000 hectares of these terraces per year for the past four years, according to figures recently made available by Peking.

A major building program has also raised the number of big and medium sized reservoirs from little more than 20 in the early 1950's to more than 2,000 now. Growth was even larger for small reservoirs, and many ponds have been dug. Irrigation canals feed water up the hills by means of new pumping stations. Total mechanical irrigation and drainage has increased 34 times in the last 25 years. Production of pumps for irrigation has increased 12 times, for drainage 7.5 times. In seven provinces of the north and east, pumps service more than 60 per cent of the irrigated lands.

Waterlogging is an old problem in China, particularly in the south, where low yields caused by excess water accounted for one third of the paddy land. But now more than half this area has been transformed and yields have risen from two tons per hectare to five or even 7.5 tons. China says two thirds of the vulnerable land is now under water control.

Another ancient problem—drought—has also been attacked through a massive well building program, particularly in the north, where rainfall is scarce. By 1974,

1.2 million pumping wells had been sunk in the 17 provinces, municipalities and autonomous regions of the north. Large increases have been recorded in the irrigated acreages of Honan, Shantung, Shensi, Kansu, Liaoning, Kirin and Heilungkiang provinces, as well as in the Peking municipality.

Coupled with these water programs has been an intensive program to upgrade the quality of high acid and high alkaline soils.

China now boasts that, with these improvements, it is free from natural calamities and assured of good crops.

ARTHUR C. MILLER

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## Environment Vs. Development In Colombia's Coal Fields

**BOGOTA**—A decision is expected soon on who will get to develop Colombia's Cerrejon coal fields, the richest in Latin America (*WER*, March 31, p.1).

Kennecott's subsidiary, Peabody Coal Co., still has the inside track, but must decide whether it will accept a series of new demands by the Colombian government, including environmental safeguards, to clinch the deal. Among the new conditions are majority government control, payment of coal royalties and a training program for Colombian technicians.

Cerrejon is Colombia's first significant attempt to exploit its vast coal reserves, which comprise two-thirds of all the reserves in Latin America. Contracts for other fields in central and southern Colombia will be negotiated as soon as the government completes formation of a state-owned coal enterprise that will implement national policy.

Despite pressure from its energy-hungry neighbors, such as Brazil, the government has refused to rush into an agreement in the belief that, for once, the country is in a position to develop a coherent policy for an important national resource that will protect the nation's economic, technological and environmental interests. The Colombians can afford to take their time because Cerrejon alone will rank their country fifth among coal exporters, after Russia, Australia, Canada and Poland.

Ten foreign companies are seeking contracts to exploit Colombian coal, in sharp contrast to the situation four years ago when only three out of 51 companies responded to the government's invitation for bids on Cerrejon. Only Peabody met the government's minimum conditions at that time. Exxon's local subsidiary, Intercol, has been competing keenly with Peabody for the coal deposits adjacent to and including the original 25,000 acre Peabody concession.

Located on the desolate windswept Guajira Peninsula in northeast Colombia, Cerrejon will cost about \$250 million to develop by the target date of 1980. The operation will probably be open pit, for economic reasons. The government has already obtained \$50 million from the World Bank, but technology, not money, is the main reason the government is seeking a foreign partner, according to Guillermo Gaviria, director of the state-owned El Cerrejon Coal Mines.

Cerrejon, which has an estimated 300 million tons of coal, forms part of a mineral cornucopia that also includes large natural gas fields, now being developed by Texas Petroleum in association with the state-owned Colombian Petroleum Enterprise. Guajira petrochemical and thermoelectric plants are already on the drawing boards.

To avoid the environmental traumas of overnight industrialization, the government and the private companies have commissioned a series of studies on the

environment, particularly with regard to protecting the area's rivers, on irrigation and on creating new communities that will blend with the Guajira desert, including an urban development project designed for Cerrejon workers by Bogota's National University which won top honors from the International Federation of Schools of Architecture. Today, the Guajira is still inhabited primarily by nomad Indians.

PENNY LERNOUX

## Denmark Urged to Undertake Major Paper Recycling Plan

**COPENHAGEN**—One factory reprocessing waste paper could produce two-thirds of Denmark's newsprint needs and save foreign currency for imported paper, a government working group has reported.

Set up by the Environment Ministry, the group said its plan would save about \$20 million annually in foreign exchange because Denmark imports most of its newsprint. The group included representatives of the ministry, the paper industry, waste paper dealers and local authorities.

The proposed plant would produce 100,000 tons of newsprint each year from a mixture of waste paper, Danish pine and cellulose. It would cost \$75 million and would employ 160 workers, while another 200-300 would be needed for collecting and sorting the waste paper.

The group also recommended that regulations should require corrugated paper and cardboard used in Denmark to contain 85 per cent recycled paper.

Environment Minister Helge Nielsen, commenting on the report, said the newsprint plant would help stabilize the widely fluctuating price for waste paper, which has so far discouraged individuals and companies from collecting wastes because they cannot predict the economics.

Negotiations will soon begin toward realizing the plan with all concerned parties, Nielsen said.

## Strong Calls for "New Growth"

**NEW YORK**—Maurice F. Strong, departing executive director of the United Nations Environment Programme, was awarded the Audubon Medal at the National Audubon Society's annual dinner November 12.

In accepting the award, Strong called for a new approach to growth "based upon removal of the artificial and self-defeating conflict between ecology and economics which is now built into our system. . . We must build into the system by which growth is generated and managed measures which assure preservation of the resource and environmental capital base on which continued development depends."



## Transportation: World's Cities Struggle with Environment/Energy Crunch

The combined problems of high energy cost and increasing traffic congestion in urban areas are leading many cities around the world to rethink their transportation systems. One regret among a lot of city officials is that they allowed their old electric trolley lines to go out of business. In some cities, plans are afoot to revive this clean, non-gasoline-consuming mode of transport. Here is a roundup from *World Environment Report* correspondents:

**Italian Renaissance**—In Italy, many officials see the system used in Vienna's Ringstrasse—where streetcars run underground in the city center—as a possible answer to the enormous congestion and pollution problems of Italy's antique towns and cities.

In many of these cities, authorities are banning private vehicles from congested centers and planning underground systems. But subways are too expensive or not feasible in many areas. Therefore, planners see streetcars as an answer in center cities, with trolley buses for the suburbs. A big fleet of trolley buses was developed in Italy following World War II, but it is now down to a few hundred vehicles, the major drawback being the dependence on overhead power lines. Today, however, pressure from environmentalists is reviving interest in them.

In Milan, for example, the transport authority has produced a prototype of a new trolley bus that has a low deck and wide doors to speed up exit and entry. The vehicle has a small diesel for emergency maneuvers. In La Spezia, the busy northern port, mothballed trolleys are being rebuilt with new lightweight bodies on old chassis. The wheels and electric components are still good after three decades of use.

Elsewhere in Italy, however, the interest in such transport systems is still spotty.

**British Cutbacks**—In Britain, all public transport is subsidized, and the government is cutting back this support as part of its policy to slash public expenditures to help the general economic situation. Deficits are to be made up through increased fares and reduced service.

Since many uneconomic railway lines were closed some years ago, several rural areas now rely on bus service. Those local authorities with the smallest and most scattered populations will have to find proportionately more cash to keep any services going. The National Bus Co.—the largest bus group in England and Wales—has already cut its routes by 10 million miles this year and a further 40 million miles (5 per cent of the total) will be lost unless more subsidy is forthcoming.

In London, the Transport Executive, responsible for bus and underground services, already in difficulty, will have its government grant reduced by 26 per cent next year.

But many commuter and worker groups are attacking the government policy, saying it favors road building

while letting public transport decay. "Further cuts to rail services and the threat of reduction in bus and coach routes may leave communities completely isolated—a return well-nigh to the middle ages for all those who do not own cars," charges the National and Local Government Officers Association in a pamphlet released this month.

Richard Hope, editor of the *Railway Gazette*, charges that the government regards railways as an obsolete technology, one the country cannot afford, and is willing to see the present 9,000 miles of track reduced to 3,500-4,000 miles. Meanwhile, Hope said, spending continues for road building because the losses are less visible than for public transport.

A further gasoline price increase is imminent in Britain, but as public transport decreases, more people must rely on their own transport or go without.

**Greek Pollution**—The Greek Ministry of Transport and Communications is seriously considering using trolley cars in cities to replace diesel buses as a means to reduce oil consumption, improve transport and, in particular, to reduce air pollution.

The measure will first be applied in Athens and extended to other cities if it proves successful. Today, Athens has 2,200 diesel buses and only 150 trolley cars. Most of the buses are over 13 years old and cause serious environmental problems. A committee set up to deal with the issue has proposed that trolley cars be substituted for the buses.

The Ministry has conceded that these old buses, burning a poor quality of locally refined oil, are a major source of pollution. Furthermore, while Greece must import all of its petroleum, it is beginning to exploit its huge lignite deposits to produce electricity. A switch to trolleys would be right in line with this program.

**Mexican Traffic**—Mexico City has 250 street cars and 550 trolley buses. Between 1970 and 1974, the city spent \$4.5 million on restoring the trolley buses and \$1.3 million on the street cars. It paid off.

In 1974, the trolley buses carried 162.3 million passengers; the street cars, 79.5 million. The government has been upping its investment in the system each year as the number of passengers rises.

Mexico City faces a twin plague of massive traffic jams and vehicle related smog,—there are 1.7 million motor vehicles registered in the city, plus 500,000 in daily commutation—and there is intense interest in other aspects of the transportation picture as well.

A 40.3-km, ten-lane interior circuit roadway with feeder roads is under construction in hopes it will relieve congestion on the city's major arteries. A fourth line is being added to the 43-km subway system that opened in 1969, although work has been held up by lack of funds.

The present three lines carry 500,000 to 600,000



passengers daily, more than expected, at fares from 8 to 10¢. Scheduled for service by year's end are 345 new subway cars, which will nearly double system capacity.

A 6-km. electric monorail is planned for the northwest part of the city, with financing through a \$15 million credit from the Swiss firm, Merban Corp. The elevated monorail will carry 10,000 persons per hour on 90 cars to 12 stations. Construction cost is estimated at \$1.6 million per km, compared with \$10 million/km for the subway and \$5.6-7.2 million for surface roadway.

Mexico City also has some 6,500 passenger buses owned by 50 different private companies. Because of this diversity, control is difficult, although some 3,000 of these buses were recently switched from gasoline to diesel for cheaper, cleaner service.

The city (federal) government is putting into service new luxury buses in which standing is not allowed. These include 1,700 Dolphins already in service, while tests are underway on Whales (larger) and double-decker Mammoths (larger still). Bus fares range from 5 to 11¢.

**Venezuelan Oil**—Caracas has doubled its population every decade since World War II (it's now 2.4 million), but some Caraquenos still remember the city's old trolley system with nostalgia. The trolleys were replaced by buses about 1946, and traffic jams have been getting worse ever since. The city now relies on 1,500 buses for public transport, plus 23,000 taxis, of which 12,000 are jitneys, minibuses, and 300,000 private cars.

Because Caracas is a long string of urban areas and barrios climbing into the surrounding hills, a trolley system is no longer considered practical.

Most of the private cars are big gas-guzzlers, which reflects the lack of energy shortage in oil-rich Venezuela. A long-planned subway system is supposed to begin construction next year and is presented as the solution to the city's critical air, noise and transit problems. Today, 1.5 million potential subway riders must line up from as early as 5 am to go to work because there is a deficit of 1,000 buses.

**Brazilian Power**—The fact that Brazil must import 80 per cent of its petroleum but has tremendous hydropower potential has caused intense regret at the scrapping of the efficient street car systems that served the country's cities in the 1940's and '50's. The only remaining run is the little open-sided street car that connects downtown Rio with the steep hillside district of Santa Tereza. But this situation brought intense interest in electrifying rail lines, building subways and establishing trolley bus systems.

The most recent five-year railway plan gives top priority to electrification, especially suburban trains and busy routes like Rio-Sao Paulo-Belo Horizonte.

Both Rio and Sao Paulo have been building subway systems for the last five years, and Sao Paulo has already opened a 2-km stretch. In Rio, the construction has run into financial and technical problems brought on by the difficult terrain. In fact the subway is being built contrary

to the recommendations of separate studies by Canadian and Japanese experts.

In the meantime, however, interest is high in increased use of trolley buses. Both Rio and Sao Paulo are considering "pre-subway" systems of trolley buses running the same routes on which the subways are built.

The southern city of Curitiba is taken as a model for transportation and urban planning. One innovation, which is to be imitated elsewhere in Brazil, is the express trolley bus running along exclusive lanes crisscrossing the busiest routes. Since this system was introduced two years ago, both Rio and Sao Paulo have come up with luxury express bus routes that are said to have greatly reduced car commuting. But these systems are not yet electrified.

**Asian Roundup**—Faced with ever-increasing urban populations, Asian transportation planners are looking for ways to move large numbers of people quickly and cheaply. The answer they've come up with is the subway, and they are moving away from more-traditional methods such as trolley buses and trams. Most of the trolley bus and tram systems in Asia are relics of colonial times.

Bombay still has an extensive trolley bus system, and Calcutta has an antiquated tramway. At the other end of Asia, there are two tram systems in Australia, one in Melbourne and the other in Brisbane, but neither is being extended. In New Zealand, there are trolley buses in three cities—Wellington, Auckland and Dunedin. Wellington's is extensive, but the other two are being phased out in favor of diesel buses.

Hong Kong has a lengthy and efficient tram system, but it operates only on Hong Kong island and not in the more crowded Kowloon area. Each tram bears a sign saying "Pollution solution, travel by tram." While there are no plans to expand this system, it will undoubtedly continue to operate.

The Peoples' Republic of China has trolley bus service in Peking, Shanghai and Canton, as well as some smaller cities. But with China's recent oil finds, it is unlikely these electric systems will be extended. The North Korean capital of Pyongyang also has a trolley bus service, with little talk of expansion.

But Asian countries are moving fast to develop subway systems. North Korea opened its subway in 1973, a shining edifice in the Moscow style. South Korea opened a subway in its capital, Seoul, last year, and construction continues on expansion.

Tokyo has the most extensive subway system in Asia, with millions of daily passengers. Peking has a cross-city subway and plans to develop it further. Hong Kong has started construction of its subway system, with a first stage scheduled for completion in 1980 that will connect with Kowloon.

Manila also plans to build a subway and has set a provisional starting date of 1978. The Thai capital of Bangkok has been talking about a system for years, but there are still no definite plans.

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## Briefs...

### Sri Lanka Malaria Thrives In Abandoned Gem Pits

Thousands of illicit gemmers have caused an upsurge of malaria in Sri Lanka, as their abandoned gem pits become breeding grounds for the anopheles mosquito. The gem rush has attracted people from all parts of the country to central Sri Lanka where rich finds have been made. They live in jungle camps, digging new pits, and then going home after some weeks of gemming. They often contract malaria and take it back to previously uninfected areas, thus spreading it even more efficiently than the mosquito. Despite an all out campaign launched by the government in March, malaria cases are on the increase—over 281,000 cases up to August this year, compared with 202,000 during the same period of 1974. The anopheles is showing resistance to DDT.

Sri Lanka's Deputy Minister of Health, Siva Obeysekera has denounced the gemmers and regards the uncovered pits as one of the main obstacles to eradicating the disease. She does not believe the answer is stiffer penalties, however, but strict licensing with requirements that pits be covered, once exhausted. Such is the practice in the older established fields of Ratnapura.

### High DDT Found in Greeks

Body levels of DDT and other chlorinated hydrocarbons are higher among Greeks than other Europeans in countries such as Britain, France and West Germany, but slightly lower than residents of the U.S., according to a report by two physicians. The agrarian population has higher levels than urban Greeks. Tests on fat samples from 50 patients showed DDT content between 0.5 and 10.5 ppm,

with the average 3.74. The report cited extensive use of DDT before it was banned in 1972 in Greece and pointed out such bizarre practices as fishermen spraying their catches to kill flies, butchers spraying meat for the same reason, and wide use in restaurant kitchens and private households. There was also heavy agricultural use.

### Quick-Charge Battery Boosts Promise of Electric Cars

Two Japanese firms claim to have jointly developed a quick-charge battery that increases the potential of electric automobiles. The Yuasa Battery Company and Daihatsu Industries, both of Osaka, say their battery can be charged to 80 per cent of capacity in 30 minutes, about one eighth of the usual time. They claim the battery can power a car for 37.5 miles at an average speed of 25 miles per hour.

### Energy Group Holds First Meet

The Conservation Commission of the World Energy Conference (a non-governmental organization of 72 countries) met for the first time last month in Vienna. The commission is an outgrowth of the conference's May meeting in Copenhagen. Chairman of the commission is John Kiely of the Bechtel Corp., San Francisco, and members include Dr. G. Obermair of Austria, Messrs. L. de Heem of Belgium, P. Ailleret of France, J.S. Foster of Canada, Prof. L. Heller of Hungary and Prof. Tor Ragnar Gerholm of Sweden.

The Commission must draw up a study for the tenth conference, which is scheduled for September, 1977, in Istanbul. The study will cover the period 1985 to 2020 and will concentrate on energy conservation not only in the sense of economy in use, but also on means to save resources and develop alternate sources.

### Japanese Geothermal Corporation

In cooperation with the Japanese Ministry of International Trade and Industry (MITI), 25 industrial enterprises in Japan have decided to start a geothermal energy program. A special corporation will be formed to develop the geothermal generation of electricity and also to serve as the springboard for overseas enterprises in this technology. The corporation will start business this month with a capital of \$333,000. Hopes are that by the year 2000, geothermal electricity of 48 million kw can be generated in Japan.

### Colombia Creates Amazon Park

The Colombian government has created a new 420,000 acre national park called Amacayacu in its part of the Amazon jungle. The park forms part of a project under study by the six Amazon countries for a multinational park (*WER*, Sept. 15, p.2). Headquarters for Amacayacu will be Leticia, capital of the Colombian Amazon. The government has forbidden unlicensed fishing or hunting in the area, and agricultural and industrial activities are also prohibited.

### S. Korea Adopts Nuclear Limits

South Korea has signed a second nuclear safeguard agreement with the Vienna-based International Atomic Energy Agency (IAEA). It calls for South Korea to abide strictly by various restrictions designed to prevent use of nuclear energy for military purposes. IAEA will inspect and oversee nuclear plants in the country, of which one is now under construction near Pusan. Others are planned for the future. South Korea has also announced plans to build 12 new hydroelectric stations by 1986 at a cost of about \$1.167 billion.



## Pollution Is Heavy in Mexico's Largest Natural Lake

Industrial and municipal wastes are having disastrous effects on Lake Chapala, Mexico's largest natural lake and a popular fishing and bird-watching spot. But federal officials say this contamination should be reduced by at least 30 per cent over the next two years. Lake Chapala is 50 km southeast of Guadalajara and covers 1,000 sq. km. It is fed by the Rio Lerma, which arises near Toluca and is the source of the contamination, according to Elroy Urroz, director general of water use and contamination control for the federal Secretariat of Water Resources. Along the river's length are 150 major industries which discharge 49,000 kg of organic wastes per day, while municipalities add 100 kg of detergents and 1,030 kg of grease and oil, Urroz said. Municipalities and industries have begun installing treatment plants, he added, and most sources of contamination have been identified.

## Turkey Acts To Force Cleanup Of Industrial Polluters

For the first time in Turkey, legal proceedings are underway against industrial firms charged with polluting the seas.

Under an environmental protection law that recently went into effect, the Union of Municipalities of the Marmara Region has filed charges against 19 industrial firms. Union representatives, working with experts from the Ministry of Food and Agriculture, established that wastes from these plants are damaging fish life and polluting the waters of Izmit Bay, the Dardanelles and the Sea of Marmara.

The problems in the Marmara, particularly near Istanbul, are many. Most of Turkey's industries are located in this region, and industrial waste is not controlled. Moreover, the heavy international ship traffic, particularly along the Bosphorus and Dardanelles, is contributing to the pollution. Istanbul itself lacks a

modern sewage system; thus a good deal of the city's human wastes arrive untreated at the seashore. The Istanbul municipality last summer proclaimed 79 beaches unfit for swimming.

Under Turkish law, penalties for polluting are small, and experts are urging authorities to pass new legislation imposing heavier fines. The new environmental protection law, which went into effect during July provides, among other things, for industrial waste treatment.

## Quality of Rhine Improves

The quality of the Rhine has "improved immensely over the past two years," according to Dr. Hartmut Reinke, chairman of the Institute of Waste and Water Disposal in the West German state of North Rhine-Westphalia, because of the increased number of community and industrial treatment plants and because of an unusually high runoff of clean water this year.

"Even without the runoff we've had," Reinke told *WER*, "the quality of the Rhine will continue to improve." This improvement has been reflected in an increased yield of eels, redeye, whitefish and pike caught by the few remaining licensed Rhine fishermen. The fishermen also report the disappearance of phenol taste from their catch.

## Adverse Impact Seen from Huge Brazil Hydro Project

As construction begins on the world's largest hydro power station—Itaipu on the Parana River between Brazil and Paraguay—warnings persist about its environmental impact. Speaking at the First Environmental Conference of the Brazilian state of Parana, Prof. Ralph Joao Hertel of the University of

Parana warned that the Itaipu project might cause extinction of all fish in the river, plus widespread flooding of the Paraguayan side. He said the high proportions of the project—the dam is designed to hold 29 billion cubic meters of water covering 1,400 square kilometers—would play havoc with the fish population and with navigation. He added that the area's Caibu sandstone is highly erosive and could damage the dam and the electrical equipment. On the Paraguayan side, the sandstone is more porous and could become saturated in time, thus flooding wide areas, he said.

## Solid Waste Projects for Singapore Approved

The World Bank has approved a \$25 million loan to help finance a \$55 million solid waste project in Singapore. Included will be construction of a 1,200-metric-ton-per-day incinerator and purchase of about 200 collection vehicles. The incinerator will be designed primarily for domestic and trade refuse, but will also be able to handle oil and other industrial wastes.

## European Forests Increasing

European forests are increasing, thanks to careful management, despite increasing demand for wood products. This was the conclusion of a September symposium held in Interlaken by the Economic Commission for Europe and the Food and Agriculture Organization.

The symposium report concluded that "while the demand in wood production, protection and conservation, and recreation will continue to grow, the environmental and recreational roles of forests will increase in relative importance. The forest laws in several countries are being reviewed to take these trends into account."



## Briefs

## Environment Education Center

The UN Environment Programme (UNEP) announced last month that an International Center for Environmental Education will be established in Madrid to serve Spanish-speaking countries. A joint project of UNEP and the Spanish government, the center will develop training and education programs, organize general courses in environmental sciences and coordinate training of specialists through a network of specialized institutions in Latin America and Spain. Total cost of the project is \$4,444,300, of which \$937,000 will come from UNEP's Environment Fund and the rest from the Spanish government and other sources.

## Hydroelectric Project Expected To Clean Colombian Rivers

Relief is in sight for Colombia's heavily polluted Bogota and Magdalena Rivers thanks to plans for a huge hydroelectric development at Saldana in central Colombia. The

\$187 million Saldana project includes two 450-ft dams to control the flow of the Saldana River and generate 1 million kw of electricity (Colombia's current output is 3.5 million kw). The lakes created by the dams will cover 37,500 acres, which will be developed as a fishing and tourist attraction; the project will also irrigate 100,000 acres.

The project is expected to reduce pollution by discharging fresh water to dilute the waters of the rivers. The Magdalena today receives 52 cubic yards of sewage per second from the Bogota (*WER*, Sept. 15, p. 7); the Saldana lakes will dilute this with 325 cubic yards of fresh water.

Preliminary studies for the project have completed by a local firm *Compania Colombiana de Estudios de Ingenieria* and a Canadian company, *Acres International*.

## Task Forces Will Look at European Chemical Industry

The Chemical Industry Committee of the UN Economic Commission for Europe (ECE) has agreed to set up to task forces—one, proposed by Spain, to draw up an over-all environmental plan for the petrochemical industry in the Mediterranean basin, and the second, proposed by the U.S., to establish reliable data on the produc-

tion and consumption of fluorocarbons. The committee met in Geneva in Mid-October. The committee also decided to co-sponsor, with the Senior Advisors to ECE Governments on Environmental Problems, a seminar on air pollution problems of the inorganic chemical industry. No date has been set. Also, a symposium will be held in East Germany in 1978 on the use of waste products from high-polymer products as secondary raw materials.

## Port-au-Prince Sewerage Survey

A problem Port-au-Prince residents have learned to live with for over a century may be alleviated, according to Haiti's Minister of Public Works, Pierre Petit. After each heavy rainfall, walls of muddy water sweep down on the city, which is nestled in a bowl at the foot of high mountains, inundating streets, forming lakes and depositing tons of sand, mud and rocks.

A U.S. firm, *Engineering Sciences*, financed by the UN Development Program, has been engaged to survey the drainage problems and create a master plan for sewerage. Today's nonfunctioning system is over 100 years old and has never worked properly, according to longtime residents.

## Calendar...

**December 1-5**—Seminar on Housing Tomorrow. Athens. Sponsored by the UN Economic Commission for Europe.

**December 8-11**—Symposium on Unification of Equipment for Water Purification Systems. Sofia, Bulgaria. Sponsored by the Council for Mutual Economic Assistance (Moscow).

**December 8-12**—Regional Meeting on Marine Parks and Wetlands in the Mediterranean Area. Hammamet, Tunisia. International Union for Conservation of Nature and Natural Resources (IUCN).

**December 9-12**—Meeting on Methodology of Sampling and Analysis of Persistent Pollu-

tants in Human Tissues and Fluids. Geneva. Sponsored by the World Health Organization.

**December 9-15**—Symposium on Social and Non Economic Factors in Water Resources Development. Bangkok. Economic and Social Commission for Asia and the Pacific (ESCAP).

**December 10-12**—Working Party on Air Pollution Problems. Geneva. Economic Commission for Europe (ECE).

**December 15-16**—Ad Hoc Meeting of Experts for the Study of Production of Engineering Equipment for Prevention Pollution. Geneva. Sponsored by the Economic Commission for Europe.

**December 15-19**—Advisory Group on Radiation Protection of the Public in the Event of Radiation Accidents. Teheran. Sponsored by

the International Atomic Energy Agency.

**January 6-9**—Ad Hoc Meeting on Statistics Concerning the Use of Energy in Transport. Geneva. Sponsored by UN Economic Commission for Europe.

**January 12-16**—Symposium on Coal Gasification and Liquefaction. Dusseldorf. Sponsored by UN Economic Commission for Europe.

**February 2-9**—Third Regional Seminar on Environmental Pollution: Solid Wastes Management. Manila. World Health Organization (WHO).

**February 10-19**—Intergovernmental Conference on Evaluation and Reduction of Earthquake Risks. Paris. UN Educational Scientific and Cultural Organization (UNESCO).





# World Environment Report

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## U.S. and Soviets Agree on More Joint Environmental Projects

WASHINGTON—The Joint U.S.-U.S.S.R. Committee on Cooperation in the Field of Environmental Protection met here last month for the fourth time to review the work carried out under the program during 1975 and to agree on programs for the next year.

On October 31, the final day of the meeting, President Ford received Russell E. Train, EPA administrator and chairman of the U.S. side of the committee, Yuri A. Izrael, chief of the Soviet Hydrometeorological Service and chairman of the Soviet side, William A. Brown, executive secretary of the U.S. side, Yuri Kazakov, executive secretary of the Soviet side, and Soviet Ambassador Anatoly F. Dobrynin to discuss the program. The President expressed his strong support for the joint effort.

The agreement now covers some 39 projects in 11 areas—air pollution, water pollution, agricultural pollution, urban environment, protection of nature, marine pollution, biological and genetic effects, effects of pollution on climate, earthquake prediction, arctic and sub-arctic ecology and legal and administrative measures.

One highlight of this year's meeting, as far as U.S. officials were concerned, was that the biosphere reserve program now seems to be moving ahead. The U.S. has already designated 14 or 15 reserve areas but the Soviets have not yet designated any. This year, however, Brown told *World Environment Report*, the Soviet side indicated it will soon designate five to seven large reserves. A joint symposium on the subject is scheduled for the Soviet Union next spring.

In February of 1976, the U.S. side will mount an exhibition in Moscow of U.S. air pollution monitoring and analysis instrumentation. Brown said that Soviet interest is high and some sales are expected. The exhibition has been put together by the Department of Commerce and features the products of eight U.S. companies. A similar exhibition on water pollution instrumentation is being considered for next fall.

Brown said the scope of the five-year joint program, which was launched in 1972, is considered broad enough and the thrust now is to intensify the work in existing projects rather than undertake new ones.

In air pollution control, the projects include cooperation on the design and evaluation of two full-scale flue

gas desulphurization processes at the Ryazan power plant in the Soviet Union, construction of which is set to begin in 1976; supporting studies on limestone scrubbing, magnesium scrubbing and ammonia scrubbing; a joint testing program for electrostatic precipitators; evaluation of a Soviet dry coke quenching process for possible demonstration in the U.S.; study by the Soviets of U.S. motor vehicle emission testing techniques and control technology.

Under the protection of nature, delegations will be exchanged to examine the environmental problems of pipeline construction, with particular attention to the impact on permafrost of projects such as the Alaska pipeline.

Under the heading of urban environment, work is continuing on projects related to problems of communities in the far north, solid wastes, urban transportation systems, noise, land use and recreation.

In water pollution prevention, the projects include a study of mathematical modelling for river basin planning and management, water quality in lakes and estuaries, effects on aquatic ecosystems and prevention of water pollution from several industries, including petroleum refining/petrochemicals, iron and steel, pulp and paper and the chemical industry.

One area in which President Ford expressed particular interest is earthquake and tsunami prediction. The two countries will continue the observations in the Garm region of Tadjikistan that began in 1974 and region of the Nurek reservoir, which is backed up by a huge earthen dam. A report of preliminary results from this program will be presented in December in San Francisco at a meeting of the American Geophysical Union.

JRM

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## Britain Balks at Common Market Toxic Discharge Proposals

**BRUSSELS**—The European Common Market's hopes of setting uniform standards for discharge of toxic substances into receiving waters in all nine member countries received a blow as Britain refused to accept proposed guidelines at a meeting of EEC environment ministers in Luxembourg October 15.

A second meeting to resolve the impasse has been scheduled for December 8, and EEC official Michel Carpentier, who helped draft the proposals expressed hope a compromise can be worked out in the meantime.

The EEC proposals are aimed at such international problems as the polluted Rhine, which serves as a source of drinking and irrigation water for many EEC residents, but also serves as a dump for many industries in France and Germany. The proposals set forth a list of harmful substances—such as mercury and cadmium—and limits on their dumping into EEC waters.

Britain, however, faces no such upstream pollution problems and wants to retain the right to set its own standards, thus upsetting the unanimity required by the EEC. Britain also maintains that its present system of monitoring water quality itself, instead of controlling wastes as proposed by the EEC, is more effective.

The meeting of environment ministers did agree on a number of other joint actions, including plans to consider a new five-year environment program next spring, coordination of EEC research and information projects with the UN Environment Programme, and a mandate for EEC participation in discussions of pollution from land-based sources of the Mediterranean. Other agreements were on standards for bathing waters, the sulphur content of domestic heating oil and the need to maintain environmental programs despite the economic recession. The West German delegate pointed out that his country has actually increased spending on water purification plants as a means for stimulating the economy.

DAVID FOUQUET

## 'Belgrade Charter' Launches Environment Education Push

**BELGRADE**—A workshop of 120 specialists from 65 countries meeting here last month unanimously adopted a "Belgrade Charter" which calls for "a reform of the educational system," criticizes economic growth without concern for environmental impact and asks for a reordering of national and regional priorities in developing and protecting the environment.

Sponsored by UNEP, UNESCO and the Center for International Studies of the University of Belgrade, the meeting aimed at discussing how environment should be taught in the schools and how teachers should be trained to teach it. It was the first step in a three-year, \$4 million project leading to a world conference of government education policy makers scheduled for 1977 in Tbilisi, U.S.S.R., which is expected to proclaim specific principles of environment education.

The Charter calls on governments to proclaim 1977 as "Environmental Education Year" to coincide with the Tbilisi conference.

The meeting passed 119 recommendations and agreed to organize 25 pilot projects, five each in Africa, Asia, the Arab States, Latin American and Europe-North America. These will study teacher training, use of the mass media to educate the public about environment and re-education of engineers, architects, planners and lawyers to have an environmental awareness.

The Charter declares that "there is evidence of increasing deterioration of the physical environment on a world scale," and calls for a new global ethic to prevent further deterioration.

The Charter also attempts to define environmental education and declares it should "consider the environment in its totality—natural and man-made, ecological, political, economic, technological, social, cultural and aesthetic, be interdisciplinary in its approach, emphasize active participation in preventing and solving problems, examine major environment issues from a world point of view and examine all development and growth from an environmental perspective."

BRANKA BOSKOVIC

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## International Experts Call for Pesticide Monitoring Effort

ROME—A group of 20 experts from 18 countries has drafted a program for worldwide monitoring of pesticide residues.

Led by Prof. W.W. Kilgore of the University of California, the group was convened here last month by the UN Environment Programme (UNEP) and the Food and Agriculture Organization (FAO).

The experts agreed that teams should be sent to identify specific environmental problems wherever there is any suspicion of undesirable side effects from pesticides in areas of intensive pesticide use, in areas of known ecological vulnerability or where new and potentially hazardous uses of pesticides are planned. Areas of major concern include cotton and rice fields, where pesticides are heavily used.

Under the proposed monitoring program, the experts recommended that fully equipped laboratories and trained personnel be dispatched to areas where problems have been identified. They called for development of improved laboratory and field methods to detect and measure residues and undesirable effects, and for urgent research on the relationship between long-term soil contamination by pesticides and plant productivity.

The meeting of experts was in the continuing effort by UNEP, FAO and the World Health Organization on behalf of integrated pest control and minimal use of chemical pesticides (*WER*, June 23, p.3).

## Train Calls for Cooperation on Stratosphere Pollution Problem

BRUSSELS—Closer international cooperation, particularly on the emerging problem of stratospheric pollution, was the main theme of last month's meeting here of NATO's Committee on the Challenges of Modern Society (CCMS).

The representatives of the 15 member nations heard an urgent appeal by Russell Train, administrator of the U.S. Environmental Protection Agency, on the need for stratospheric pollution control and also for protection of endangered species. Train told of the existing cooperative environmental programs between the U.S. and the Soviet Union and other Communist countries (see story, p.1) that could serve as a model for additional east-west projects in the aftermath of the Helsinki Accords on European Security and Cooperation.

Train told the delegates the world must prepare regulatory mechanism in case the damaging effects of fluorocarbon emissions on stratospheric ozone are established. "Ozone depletion may be the first truly global environmental problem, affecting each person and ecosystem on this planet," Train warned.

Train also called attention to the need for international coordination in toxic chemicals. He mentioned

polychlorinated biphenols (PCBs), vinyl chloride and pesticides.

He urged European countries to ratify the Convention on International Trade in Endangered Species of Wild Fauna and Flora and suggested CCMS study ways of implementing the environmental aspects of the Helsinki accords.

The delegates also heard reports on ongoing CCMS research programs. These included the final phase of a project on coastal water pollution and passage of a resolution urging further study and cooperation by the member states in this field. Other programs underway include studies of advanced waste water treatment, urban transport, urban goods movement, disposal of hazardous wastes and low energy housing.

DAVID FOUQUET

## Acid Rain Is an Increasing Threat, Says ECE Report

GENEVA—More than 100 million tons of sulphur dioxide is poured into the atmosphere over Europe and North America every year by industry, power plants and other fixed installations, according to a report released last month by the UN's Economic Commission for Europe (ECE). This discharge produces what is popularly called "acid rain" or "acid snow" over large areas, the report warns.

The ECE report was prepared for the Second ECE Seminar on the Desulphurization of Fuels and Combustion Gases to be held in Washington Nov. 11-20.

ECE member countries are responsible for more than 75 per cent of the world's fuel consumption, according to the report, and for the same proportion of man-made air pollution. Main sources of sulphur dioxide emissions are power stations, refineries, metallurgy and domestic heating, and the most troublesome fuels are heavy oils and some types of coal.

Evidence gathered from Norway shows that long-range transmission of pollutants is an important element in European air pollution, the report says. Southeast and southwest air streams carrying oxides of sulphur and nitrogen from heavily industrialized areas far away produce the acid rain over southern Norway. In the most heavily exposed areas, up to five tons of sulphates per square kilometer is deposited annually. This compares with 3.9 tons measured at Wageningen in the Netherlands. This means, the report says, that distant areas are more severely polluted than those closer to the emission points.

Acid rain is blamed for "severe and continuing" depletion of fish in Norwegian lakes and rivers and for impact on the country's forest industries. Yield of forests in Norway will drop at least 50 per cent in the next 30 years, the report predicts, if sulphur dioxide pollution continues to increase at the current rate.

Also affected are forests, soil and lakes on Sweden's



west coast; other countries with acid rain problems include Denmark, Finland, East Germany, West Germany and Poland.

The report makes these recommendations: more-active community planning of heating systems in major urban areas to control environmental impact; a change from solid fuels to natural gas or electricity, where possible, following the example of Britain, where household sulphur dioxide emissions have been cut 40 per cent; standard rules on fuel sulphur content.

The report also calls for greater production of low and medium-sulphur coal and notes the progress in fuel and flue gas desulphurization.

CONSTANCE CORK, WILLIAM MAHONEY

## Tropical Ecology Institute Slated for India's Holy City

**NEW DELHI**—India will house an Institute of Tropical Ecology, probably at Varanasi (Benares), the ancient holy city 400 miles southeast of here.

The proposal was put forth and accepted last month at a UNESCO "Man and the Biosphere" meeting in Varanasi. There were 27 delegates from 15 countries, plus seven from various international organizations.

The new institute will be organized as a consortium of environmental organizations and university departments and will coordinate research in India and neighboring countries. India also proposed setting aside eight centers for research, ranging from the fertile tableland of the Mysore plateau in South India to the sub-Himalayan and forest ranges in easternmost Assam, and the parched sand dunes of the Thar desert in the westernmost state of Rajasthan.

The Indian delegates to the Varanasi conference highlighted the problems faced by nations in this region by citing the colossal waste of cultivable land in this country of 1.2 million square miles and 580 million population.

It is estimated that 187 million hectares of irrigable land is "a total waste" due to soil erosion, water logging, salinity, floods and drought. This is nearly half the total land available for irrigation and accounts for India's chronic inability to feed its booming population.

Nearly 140 million of these hectares are affected by erosion alone, some 20 million are subject to floods and 20 million more go to waste on account of poor water distribution. Salinity and water logging account for 7 million hectares.

India has about 75 million hectares, 24 per cent of its total land, under forests, but these are irregularly distributed and contribute only one percent of the country's output. Rapid encroachment on the forests is alarming; inadequate forest cover is a serious factor in the North India plains which support one of the densest populations in the world. This lack accounts for the periodic floods that ravage the region.

R. SATAKOPAN

## British Cities Choose Baling For Solid Waste Disposal

**LONDON**—Two British cities faced with both economic and environmental problems in disposing of their solid wastes are installing U.S.-designed high-density baling plants that compress wastes into blocks suitable for landfill.

In Glasgow, the Cleansing Committee chose the baling system as a replacement for the city's incinerator which was badly damaged by fire last year. The decision was based on cost and on the need to meet particulate regulations. In Leeds, the problem was one of landfill—at current rates, the city's fill sites would be exhausted in two and a half years; the baling system will extend this to nine or ten years for two thirds of the city's wastes.

Both cities chose the High Density Baling Plant that has been in operation in St. Paul, Minnesota for two years as the best alternative.

In operation, refuse vehicles enter a large covered area of the automatic plant, where they unload. Mechanical shovels transfer the wastes to a conveyor which carries them to a hopper large enough to contain bulky items. A control device stops the conveyor when the bale weight (1½ tons) is reached and the wastes enter the baling press. Here they are compressed into a block 1 meter square by 1½ meter long which is loaded automatically on trailers for transport to the fill site. The conveyor starts reloading as soon as the hopper empties, so that a guaranteed output of 50 tons per hour is maintained.

The Leeds plant handles the waste delivered by 70 collection vehicles twice a day. It is not now considered economical to separate metals or other wastes for recycle, but the plant can be adapted in future.

Glasgow's Cleansing Department estimates the baling plant is 40 to 50 per cent cheaper to install than a modern incinerator, with similar savings on operating costs. Low maintenance costs are also anticipated.

Work started on the Leeds plant in September, and total cost is estimated at about \$4.7 million. Cost of baling waste will be about \$5.70 per ton, compared with about \$11.30 for incineration.

The environmental advantages of baling over incineration and conventional land fill are many. Less energy is required for baling than for incineration, and there is no smoke problem. At the fill, there is no problem of loose material being wind-blown, and the dense bales are not expected to attract birds or vermin. Land reclamation should be faster because of reduced settling time.

The West Yorkshire County Council, responsible for the Leeds plant, hopes the cleanliness and efficiency of the baling operation will increase its public acceptance. Plans are to landscape progressively and screen the fill sites before dumping. Approach roads will avoid residential areas as much as possible.

ALAN MASSAM



## West Germany: Environment Law Progresses, Stage By Stage

**BONN**—Six stages of West Germany's new environmental protection law have now gone into effect. Passed in March of 1974, the law is imposed in stages to allow for technological advance. Ruppert Kupfer, a spokesman for the Interior Ministry which is responsible for enforcing the law, told *World Environment Report* that the law "could contain as many as 30 stages" by the time it is fully implemented.

The law outlines a set of basic principles on the responsibility of a community or industry toward the environment and it sets clean-up objectives. Flagrant offenders are threatened with fines up to \$40,000 and prison terms up to ten years.

The first of the six stages now in force defines the general objectives of the law and establishes its sphere of application. The next four set standards on (1) the granting of a "license to operate" new installations and the upgrading of older ones; (2) materials and fuels used by industrial installations; (3) the nature and operation of vehicles, and the construction or modification of roads and railroads and (4) monitoring air pollution. The sixth and most recent stage deals with administrative and legal matters, including amendments by parliament. The new law does not specify types of control equipment, nor does it specifically forbid the use of any particular fuel.

Before this law was passed, each state had its own environmental protection laws. Some conflicted with others, and those dealing with air and water pollution were often ineffective at the boundary between a strict state and a permissive one. All states are now subject to the same standards.

In addition to air and water pollution, the law covers noise, vibration, light and general sanitation of a premises. And road, highway and railroad planners are held responsible for laying out roads or tracks so that disturbance to neighboring people is kept to a minimum both during and after construction.

This section of the law was recently invoked to halt construction of a secondary road in farming country southwest of here. Villagers proved the road was not really needed and would disrupt the local farming and forestry. No major projects have yet been affected, however.

Industrial developments may not be built if they will damage nearby property values, and existing green belts must be scrupulously preserved. This section was invoked in September when a Duesseldorf court delayed and possibly stopped altogether a \$35 million power plant to be built by Voerde in North Rhine-Westphalia. Opponents claimed the coal to be used by the plant was not sulphur free and would damage the surrounding environment.

The law covers in detail common offenses of munic-

palities—discharge of inadequately treated sewage, improper disposal of solid wastes, excess smoke or odor in burning waste, noisy buses or street cars and excessive noise in construction—and prescribes grades of penalty.

The law prescribes that limits on pollution will be defined by currently available technology. Thus, an acceptable noise level for a compressor today might be treated as an offense next year if an improved damper is developed.

Private citizens are also affected. For example, power lawnmowers may not be used on Sunday or between noon and 2 pm on weekdays. The country's 20 million domestic heating plants are now subject to annual inspection. Most German communities already had such inspection laws, but enforcement was often lax.

Government planners estimate the new standards will add 10 to 15 per cent to construction costs for new plants in Germany, with chemical plants even higher. But, "this is the price that must be paid for living in a healthy and agreeable environment," said former Interior Minister Hans-Dietrich Genscher when the law was enacted.

JOHN M. BRADLEY

### The U.S. Will Miss Mr. Strong

**WASHINGTON**—The U.S. State Department has expressed "keen disappointment" at the impending departure of Maurice Strong, executive director of the UN Environment Programme.

In a statement to *World Environment Report*, Christian A. Herter, Jr., deputy assistant secretary of state for environmental and population affairs, said "there might never have been a UNEP without Maurice Strong's inspired leadership and indefatigable enthusiasm. From the very outset—during the two years of preparation for Stockholm, at the conference itself and throughout the subsequent period... Strong has epitomized this first international effort to deal with the environmental threat on a global basis."

Herter added that while "remarkably few considered the environment a matter of serious concern even five years ago," Strong has "managed to create awareness within countries and internationally of... the necessity for action." However, Herter expressed confidence that UNEP, "taking inspiration from his leadership," can carry forward the vital mission Maurice Strong so ably advanced.



## Briefs . . .

### ECE Sees Pressures To Improve Forest Management

A draft report prepared by the Economic Commission for Europe (ECE) claims there is growing pressure in many countries to recognize forests as national assets and to impose a responsibility to manage them in the national interest. The report suggests taxation to penalize inefficient management and encourage "dynamic but ecologically acceptable" operations.

The report also poses questions about the future role of wood as an energy source in light of rising prices and dwindling supplies of other fuels. And it suggests chemicals, alcohols, yeasts, proteins and sugars might become the main product of wood processing, with pulp, paper and lumber becoming secondary.

The ECE draft points out that a shift in building codes toward energy conservation could favor the use of wood products. Finally, the report asks whether the developing countries will reject the excessive use of paper products for wasteful purposes such as excess packaging and advertising.

### French Police Are Cracking Down on Noisy Vehicles

The French Ministry for the Environment has launched a new campaign to fine those causing excessive noise. The ministry has organized 58 anti-noise brigades—three or four men each—and sent them out on patrol; 21 groups are from the National Gendarmerie and the rest from local police. Their main targets are noisy cars, trucks, scooters and motorcycles, and they will also check exhausts for excess pollution.

A top noise limit has been established for each category—76 decibels for motor scooters, 85 for cars, 87 for motorcycles and 94 for trucks.

The level of fine will be up to the police, but the scale will be \$18 to \$23, according to the ministry.

In theory, drivers are not permitted to blow horns in Paris. In practice they delight in blowing them, especially in the traffic snarls that take place every morning and evening at big intersections such as the Etoile. Police look in vain for specific horn blowers in the mass of cars, and taunting the gendarmes seems only to add to the pleasure.

### Earthcare Petition to UN

An EARTHCARE petition, bearing more 192,000 signatures from 25 countries, was presented to UNEP's Executive Director Maurice Strong last month at UN Headquarters in New York. The petition calls for protection of the global environment as a basic human right and cites three specific instances—mercury poisoning, injury to tropical rainforests, reduction of the ozone layer—where human rights are denied by failure to protect the environment. It calls on the UN Human Rights Commission and the Economic and Social Council to investigate these charges.

The petition was first released on World Environment Day this year, June 5, at the EARTHCARE conference sponsored by the Sierra Club and the National Audubon Society.

### India Establishes Family Planning Training Center

India has established a National Institute of Health and Family Planning as a training center for specialists in south and southeast Asia. According to Dr. Karan Singh, minister for health and family planning, the Danish government has promised to fund a building to house the new institute. He says the institute will attempt to break away from current bureaucratic rigidity to

make health and family planning programs popular. The approach will be to make these programs part of the over-all health picture, so that limiting the number of children becomes part of a family's composite health plan.

Emphasis will be on the health of mothers and children, and those who cannot have children will be helped as well. An approach based merely on preventing births is met with suspicion and lack of cooperation, according to Dr. Singh.

India has made intensive family planning a cornerstone of its official policy over 20 years. Of the 580 million people in India, only 120 million are in the reproductive age group. But despite the fall in birth rate, annual population increase is now 13 million, compared with only five million 20 years ago. This is attributed to the substantial drop in death rate due to better medical facilities.

The institute has been carrying on a campaign to enlist the active cooperation of mothers and now intends to carry its work to adjoining countries whose economies are tottering under the weight of increasing population. For one example, Bangladesh has within its 55,000 square miles a population of 75 million, and is bursting its seams.

### Urge Greater Cooperation in Environment for ECE Countries

The Senior Advisers to Economic Commission for Europe Governments on Science and Technology (an ECE subsidiary) have agreed on an outline of future activities including greater cooperation in environmental questions. The ECE Secretariat should review annually agreements on scientific and technological cooperation among the member countries, the advisers agreed, and should also study changes in national policies, priorities and institutions.

The advisers approved the outline of a study on the environmental aspects of energy production and



use, emphasizing new technologies, which they will carry out jointly with ECE advisers on environmental problems. They also agreed to include a long-term study on technological trends in basic materials and natural resources.

At their next session in June 1976, they will review ECE work on recycling of basic materials. A study on analytical framework to help governments design energy research and development strategies and select projects for international cooperation will be ready for a meeting of experts on cooperation in energy technology scheduled for next April in Varna, Bulgaria.

### Big Hong Kong Desalter Starts Up

What is described as the world's biggest and most sophisticated desalting plant has been opened in Hong Kong. The plant's six units can produce 40 mgpd by an evaporative process. It is expected to supply one fifth of Hong Kong's daily consumption. The plant cost nearly \$100 million, financed by a loan from the Asian Development Bank, and was constructed by firms from Japan, the U.S., South Korea, Britain, Australia and West Germany.

### South Korea Cracks Down on Industrial Polluters

The Ministry of Health and Social Affairs in South Korea has announced that 997 industrial establishments throughout the country have been ordered to shut down, clean up, or move because of the pollution they cause. Of these, 126 have been deprived of their business licenses, 19 ordered to suspend operation, and 18 ordered to move to new locations. In addition, 729 plants were told to employ more pollution control measures and 55 were brought to the attention of pollution control agencies. These actions follow a nationwide survey of more than 4,000 petrochemical,

pulp, metal refining and fermentation plants.

The South Korean Government also announced plans to spend \$172 million on pollution control next year. Plans are to establish 48 monitoring stations, of which 42 will record air pollution levels and five water pollution. The remaining one will be an over-all pollution control center.

### Project To Regulate Cali River

Colombia's Cauca Department (state) has signed an \$843,000 contract with the city of Cali in southwestern Colombia to regulate the Cali River and conserve the natural resources of the river basin. The country's second city and southern industrial hub, Cali will be assured a regular water supply as a result of this program. The project also includes development of the Farralones National Park covering 15,617 acres, a land reclamation program affecting 7,343 acres and reforestation of 4,380 acres. Complementary infrastructure is to be constructed to improve the standard of living of the local inhabitants. Also undertaken will be studies of the basins of the Pance, Melendez, Canaveralejo and Aguacatel rivers.

### UNEP Plans Athens Press Meet

UNEP will conduct a seminar for the mass media in Athens this month in cooperation with the International Public Relations Association (IPRA) on "The Mediterranean Community: Laboratory for Survival." The Nov. 25-29 seminar will draw some 150 professional communicators from Mediterranean coastal states, according to UNEP, to discuss creating public awareness of Mediterranean pollution, the competing demands for shared natural resources in the region and the problems of tourism and urban planning.

### Construction Ban Sought in Mexico City High Zones

An environmental "high zone" has been proposed for Mexico City, with all construction banned at altitudes above 2,350 meters. Official altitude of the capital is 2,240 meters above sea level and it lies in a basin surrounded by mountains. The city has 1,000 square kilometers of high green land, according to Angela Atessio Robles, the city's director of planning, and these urban forests must be preserved "to provide sources for recharging" the atmosphere of the city. In lower areas, she said, about half the land has been used for some type of construction, thus leaving other needed green spaces and forests.

### 'Pollution Commandos' Survey Sao Paulo Complaints

"Operation White" has been launched as another attempt to combat pollution in Sao Paulo, Brazil's biggest city and one of the world's most polluted. The program is basically a pollution survey, with no enforcement power. A central downtown office and "commando" posts throughout the suburbs are staffed by 133 inspectors, including 52 students, who wear white tee shirts and drive 40 white Chevettes.

Organized by the state Environmental and Sanitation agency to gather statistics based on citizen complaints for one year, the program got underway in mid-October. In the first three days, there were 244 complaints. Every serious complaint brings an inspector to gather details, which are catalogued at the office. A followup crew visits the offender and attempts to persuade him to stop polluting.

Most complaints have been against industries. These are broken down into categories such as smoke, dust, odor, day or night noise and vibration. Most of the guilty parties are already known to city authorities, but some new ones did turn up.



## Air Pollution Attacks Acropolis Monuments, UNESCO Reports

A UNESCO report has singled out air pollution as the foremost threat to the 2,500 year old Acropolis in Athens. If immediate measures are not taken, the report says, "the monuments may be lost forever." Greek Minister of Culture and Sciences, Constantine Trypanis, said "atmospheric pollution in the last 40 years has caused greater damage than that suffered in the last four centuries."

"Pollution gnaws at the marble and wears it down into thin dust," the report said, and "deterioration dangers are particularly intensive during the winter when atmospheric

pollution is worst. Then a heavy rain or hail will suffice to break away parts of the columns and statues." Possible cures proposed by the UNESCO experts include covering the most exposed and deteriorated monuments with plastic, or even moving some of them indoors until a lasting cure is found. Some monuments could be replaced by copies.

Monuments singled out by the report are the Parthenon, the Winged Victory and the Erechthion. The experts also examined the Temple of Apollo at Fialeia in southern Greece, but found the threat less because of the absence of air pollution.

The UNESCO team is working under a \$1.6 million antiquity rescue program of the Greek government

and may secure more funds from abroad. Trypanis said protective work will begin soon and that the foreign experts will return to supervise.

## A Loan for Greek Irrigation

The European Investment Bank has granted a 30 million loan to Greece for an irrigation and drainage plan in northern Greece. The plan calls for water storage to irrigate 250,000 acres and improve irrigation and drainage on 50,000 acres. The project will cost \$107 million and is to be completed by the end of 1978. A similar \$40 million loan was approved by the World Bank for central Greece.

## Publications . . .

Following is a list of books and other publications received by *WER* in recent weeks that relate to international environment issues. For further information, contact the individual publishers.

**Minamata**—W. Eugene Smith and Aileen M. Smith. Holt, Rinehart and Winston. New York. \$20.192 pages. The story in words and deeply moving photographs of the famous Minamata methyl mercury poisoning incident. Photographer Smith and his Japanese-born wife spent three years chronicling the tragic fate of the victims, who ate contaminated seafood, their long legal battle with the Chisso Corporation, whose acetaldehyde plant was the source of the mercury, the dissembling by non-affected townsfolk and government officials, and the final dramatic confrontation in which the Chisso management at last admitted responsibility and agreed to pay indemnities. Smith concedes in his introduction that "this is not an objective book"—he was himself severely beaten by company toughs—but "a passionate experience." He regards it as a "warning to the world," made necessary because "pollution growth is still running far ahead of any anti-pollution conscience."

**The Evolution of IBP (International Biological Programme 1)**. Edited by E.B. Worthington. Cambridge University Press, New York and London. \$29.95. 268 pages. This is the first of some 35 volumes reporting on the work of the International Biological Programme (IBP), which ran from 1964-74. This Volume 1 describes how IBP was conceived, how the areas for study were arrived at and how the program was put into operation. IBP

was established by the International Council of Scientific Unions (ICSU), and its over-all subject was defined as "The Biological Basis of Productivity and Human Welfare". Within that, the areas covered were Terrestrial Productivity, Productivity Processes, Terrestrial Conservation, Freshwater Productivity, Marine Productivity, Human Adaptability, and Use and Management of Resources.

**Photosynthesis and Productivity in Different Environments (International Biological Programme 3)**. Edited by J.P. Cooper. Cambridge University Press, New York and London. \$65. 715 pages. A part of the IBP series, this book sets out to provide "a comparative survey of the photosynthetic activity of different ecosystems, both terrestrial and aquatic, including an examination of the physiological basis of such activity and its possible modification by management and breeding."

**Food Protein Sources (International Biological Programme 4)**. Edited by N.W. Pirie. Cambridge University Press, New York and London. \$22.50. 260 pages. Another volume in the IBP series, this book emphasizes novel or potential sources of food protein and discusses methods of extraction and increasing the acceptability of these foods.

**Noise**. Rupert Taylor. Penguin Books, Baltimore. \$3.50. 274 pages, softbound. This is the second edition of the book written by

Taylor, a British noise consultant, and it is directed toward "the interested layman." He gives a short course in acoustics, the propagation and transmission of noise, hearing, sources of noise, noise control and regulation.

**The Concorde Fiasco**. Andrew Wilson. Penguin Books, Baltimore. \$1.95. 157 pages, softbound. Andrew Wilson is an associate editor of the *Observer* and was one of Britain's earliest critics of Concorde, the Anglo-French supersonic transport. A history of the Concorde program and a documentation of the author's view that the aircraft is unsound economically and environmentally and has been kept alive by political and nationalistic pressures. The book also includes a discussion of SST programs, and the lack of them, in the U.S. and U.S.S.R.

**Ground-Water Storage and Artificial Recharge—Natural Resources/Water Series No. 2**. Department of Economic and Social Affairs. United Nations, New York. Sales No. E.74.II.A.11. \$14. 270 pages, softbound. Based on expert meetings in 1968 and 1969, this book discusses the basic characteristics of ground-water reservoirs, how to exploit them and the principles of artificial recharge. Included are descriptions of 34 case studies from around the world.

**Spillages from Oil Industry Cross-Country Pipelines in Western Europe**. Stichting CONCAWE, The Hague. Available as Report No.7/75 free, on receipt of address label. This is an annual report on spillages from the 17,350 km of cross-country pipelines in Western Europe during 1974. The report by CONCAWE, an oil industry study group, shows 18 relatively minor spills.





# World Environment Report

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## New Italian Law Overrides Nuclear Site Opposition

*ROME*—A new law empowers the Italian government to override the opposition of local authorities in siting nuclear power plants. The law clears the way for an ambitious power program that has been delayed by political bickering and environmental opposition (*WER*, June 9, p. 3).

Italy has scant fossil fuels of its own and nuclear energy has therefore been considered the best alternative to imports.

The Italian electricity board, ENEL, which produces 75.5 per cent of the country's electricity, plans to raise its nuclear capacity to 20,000 MW by 1985 for 50 per cent of the demand for electricity, up from today's 600 MW and 3.4 per cent. ENEL already operates three plants, is building a fourth of 850 MW and has on order four more at 1,000 MW each.

But choosing the sites for these plants has become a stumbling block that has halted construction and led to conflict between ENEL and the city boards involved.

The new law gives national authorities the power to break these stalemates and to impose a solution where necessary. This authority had been suspended for years in the decentralization of local administration in post-republican Italy.

Under the new law, which came into effect last month, the Ministerial Committee for Economic Planning (CIPE) designates regions where new electric plants are needed. Regional authorities are then allowed 150 days to indicate to the Ministry of Industry two alternative sites. If they do not, areas are designated by a specific law drawn up by the Ministries of Industry and of Economic Planning and voted upon by the national parliament.

After consultations among ENEL, the National Nuclear Energy Commission and the Ministry for Environmental Assets, the regions are again allowed to designate the best building sites. If they do not, CIPE has the final word, and ENEL will proceed without local building permits, which heretofore have been the chief weapon of environmental groups seeking to block ENEL.

The law sets time limits for each step so that no more than two years will elapse from the planning stage of a plant to digging foundations. Legal opposition by local interests is still possible and expected.

For the four plants already on order the law specifies more rapid solutions, indicating locations on both sea coasts of central Italy. CIPE must designate four more sites within 30 days.

In anticipation, ENEL produced a set of regional charts specifying the best siting areas for its ten-year program.

VITTORIO PESCIALLO

## The Netherlands Proposes Broad Noise Control Program

*AMSTERDAM*—The government of the Netherlands has submitted a ten-year noise abatement program to parliament. In presenting the Noise Nuisance Bill this month, Minister for Public Health and Environmental Hygiene Irene Vorrink said she hoped it would control the worst noise pollution within two or three years, with another eight years needed to complete the job.

The proposed bill takes a three-pronged approach against noise: at the source, in its transport to the surroundings and at the receiver.

Noise pollution has doubled in ten years, Vorrink said, and has become a serious social problem. A five-year study by the National Health Council found that 20 to 30 per cent of the 13.5 million population is oversensitive to noise, 50 per cent normally sensitive and 30 per cent insensitive. About half the population is suffering from excessive noise.

The worst sources are, in order: road traffic, (responsible for 60 per cent), neighbors, industry, and discotheques, sex clubs and youth clubs with amplified music.

The bill would establish noise level standards outdoors of 50 decibels during the day and 40 at night; inside, the standards would be 40 and 30, respectively.

Household appliances, "hobby" equipment, auto-

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mobiles, motorcycles, motorized bicycles, trucks, buses, trains, vessels and construction equipment would be subjected to noise limits. Silence zones would be established around industries and high-volume roads. Where this is not feasible, transport of noise would be reduced by screens formed of rows of trees. Rules would also be established for noise insulation of new and existing homes.

Costs of the ten-year program have been estimated at \$770 million, of which 60 to 70 per cent would be related to road traffic. Costs would be paid by the polluters in the form of levies, although the bill does not set forth rates.

The proposed bill does not include aircraft noise, which will be addressed in proposed amendments to the Air Navigation Act.

Enforcement of the noise regulations would be left to local authorities, who would be provided with measurement equipment and required to create special departments for receiving complaints. They have been requested by the central government to determine which areas in their provinces still enjoy natural noise levels.

H.G. KERSTING

## Aluminum Industry Meeting Agrees on Environment Cooperation

*PARIS* — Representative of the world's major aluminum producing firms have agreed to cooperate fully with governments and international organizations in coordinated effort to improve environmental protection.

This was the main result of a seminar held here this month under the sponsorship of the UN Environment Programme's Office of Industry (*WER*, Sept. 29, p. 2). The seminar was attended by representatives from 17 member states, 30 industrial companies and eight international organizations.

Leon de Rosen, director of the Office of Industry here called the agreement "a significant step forward and an unprecedented action."

The conclusions approved at the meeting stated, in part, "the seminar recognized that the industry, in general, has made and will continue to make considerable progress in both application of environmental protection measures and in development of improved cost-effective abatement techniques. Industry accepts that emissions should be held at levels that do not harm either the health or welfare of the workers within a plant or the surrounding environment . . . It (industry) has accepted the desirability in the long term to move from the present situation of add-on pollution abatement to a new, comprehensive, integrated approach with low energy, low polluting technologies . . . The advanced industrialized nations and the industry further recognize a responsibility to the developing countries . . ."

It was agreed that pre-siting surveys and environ-

mental impact assessment should be made by the industry and approved by environmental protection authorities before construction of a plant is authorized. Operating conditions should be defined in so far as they affect environment. Working conditions for employees should be monitored and improved, the group agreed.

Trends noted at the meeting included: new process technologies and control techniques and new energy-saving processes and techniques for all stages of the aluminum industry, and increased possibilities for recycling.

The seminar agreed that both governments and industry should cooperate in establishing an environmental monitoring system and that "internationally comparable methods of monitoring and measurement should be established within the industry, and the results of measurements should be expressed in metric units."

The seminar concluded that follow-up activities should include drawing up guidelines for environmental protection, evaluating the cost-effectiveness of proven pollution control techniques in the production of aluminum, establishing techniques for measuring emissions or intrusions into the environment on an internationally comparable basis, collecting data and establishing criteria on the exposure of human beings, aquatic life, fauna and flora to all the major emissions from aluminum production, including noise; evaluating the costs of new aluminum technologies as they are developed and of the relevant environmental controls; evaluating conservation of both energy and resources through improved processing and recycling techniques.

The participants agreed that an exploratory meeting of experts should be held to consider the possibilities of organizing a seminar to examine the problems of a more wide-spread application of recycling in a cost-

(Continued on page 6)

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## Maurice Strong: UNEP Is Now Ready for a New Political Mandate

NEW YORK — Maurice Strong, who has resigned as Executive Director of the UN Environment Programme effective the end of 1975, believes that UNEP is now "working at the edge of its political mandate."

In other words, he told *World Environment Report* in an interview here, "the real task of UNEP now is not to take a lot of major new political initiatives, but to sit tight on what we've got and make sure the task of implementing the present program continues."

But, he emphasizes, "it is now very important to condition public opinion and awareness for the next major jump in political mandate" for UNEP. Strong believes the whole environmental issue must now move into the center of the global arena.

"This has been our main theme ever since before the Stockholm conference," Strong said. "We must deal with environment through the development process itself. The decisions we now make on growth and development are those that will condition the future state of the environment, either positively or negatively. Just taking a look at a given project from the environmental point of view is no longer adequate; we really need to change the whole basic approach to growth."

Strong hopes that ten years from now environment will not be thought of as a separate issue but will have become an integral part of the whole growth decision process. "We must move out of the add-on stage." He emphasizes, however, that the environment will always need its own lobby and he therefore hopes "environmentalists will never disappear."

Public awareness of the environment has moved from the general high of the early '70's, Strong believes, and is now more and more related to specific issues, such as nuclear power development. And we have also moved from the point where environment was a motherhood issue to where tough, controversial decisions are required on these specific issues. There has been some backsliding, he concedes, but he maintains that environment, "while it has less dramatic visibility, now has much greater breadth and depth. More actual decisions are now affected by environmental considerations, and concern has spread to many more countries."

Asked to assess the current state of UNEP, Strong is positive. "We are established, our programs are running, we have recruited our staff, we have run in our staff, we have had some shakeouts. We now have a first rate organization in Nairobi." As for UNEP's staff, Strong declares that "I've worked in national affairs and on the boards of major corporations, and I would stack my UNEP team against any I have ever worked with."

He points out that the Environment Fund is over the top in pledges and has initiated more than 300 projects. "The fact that some governments have been phasing their payments to the fund rather than filling their

pledges outright has not been a constraint so far, but it is now starting to become so."

Strong made this point more directly in his speech last week to the UN General Assembly's Second Committee: Fund expenditures "are now growing rapidly to the point where we now face the prospect of a cash squeeze. This will become an important constraint on our activities soon if those Governments which have delayed payment of their pledges do not now fulfill them."

As for UNEP accomplishments, Strong told *World Environment Report* that the International Referral System for Sources of Environmental Information (IRS) is now launched in its initial stage and answering questions for governments, although "its capacity is still limited;" the Global Environmental Monitoring System

### Strong's New Job . . .

Maurice Strong is leaving UNEP to organize and run a new Canadian government energy corporation that will have sweeping powers. He told *World Environment Report* that the new enterprise — Petro-Canada — which was created amid considerable political controversy last spring, will have two broad functions: (1) to assure fulfillment of Canada's future energy needs; (2) to assure proper utilization of Canada's energy resources from the environmental, social and economic points of view.

The Canadian government owns 40 per cent of country's land, Strong pointed out, mostly in the northern areas, so the new corporation "will allow shareholders — the citizens of Canada — to get better utilization out of those holdings."

Petro-Canada is empowered to explore for and develop hydrocarbon or other types of fuel and energy; to undertake related research and development projects; to import, produce, refine and market fuels or energy; to invest in related projects; to acquire assets; to deal with or invest in private energy firms; to enter into direct agreements with governments; to engage in charitable or benevolent works; and, finally, "to do all such things as are incidental or conducive to the attainment" of these goals.

Petro-Canada will have initial funding of \$1.5 billion and will, in Strong's words, be "a major presence in the whole energy field — a source of advice to the government and an operating presence in the industry."

It is understood Strong will continue to be active on Canada's behalf in various international affairs.



(GEMS) is "on the edge of being operative now;" the center for toxic chemicals "is well underway;" the Mediterranean program is "well advanced, the treaty is negotiated and should be signed by the end of the year."

Asked to assess the impact of UNEP's remote location in Nairobi, a factor often grumbled about by the industrial nations, Strong said there are pluses and minuses. The cost is in administrative terms: communications are slow and "everything we do takes more time, takes more money, takes more people and takes more out of people."

The pluses for the Nairobi location, according to Strong, are mainly political. He believes that, because UNEP is headquartered in a Third World country, "we have been able to get consensus and Third World support for programs that would have been very difficult otherwise."

The French newspaper, *Le Monde*, suggested that only an organization like UNEP could have achieved the Mediterranean agreement. At a time when UNESCO was in turmoil over the Arab-Israeli issue, UNEP managed to have the Arabs and Israelis, the Greeks and the Turks, actually sit around a conference table and negotiate a treaty.

The developing nations have confidence in UNEP, Strong believes, and most of them have now acknowledged an interest in the environment at the highest level and have set up environmental programs. In addition to the problems of the land and the desert and water, many cities in these countries are now experiencing the same acute pollution problems that plague the industrial countries. Strong cites Mexico City, Santiago, Manila and Cairo as prime examples. He sees the human settlements issue, which has been pressed by the developing countries over some objections by industrial nations, as really just "a packaging of the issues of pollution, noise, transport, waste disposal and water quality," and hence well deserving of high priority at UNEP.

He sees paradox in the fact that some of the industrial countries that once urged UNEP to convince the developing countries of the importance of environment now complain that these countries are taking over UNEP's program.

In answer to critics who suggest that UN agencies are too bound by political disagreements to be effective, Strong challenges them to name one instance in which political interest has prevented UNEP from doing its job. In fact, he believes, "too narrow a political base is also a danger. The usual U.S. impulse is to set something up, call it international, but keep it under U.S. control. Such an organization may be able to do something dramatic, but is it really able to get the agreement of people around the world? UNEP may take more time, but the fact of its broad political base means it can deliver an agreement."

As for the future, Strong feels that there is some danger of UNEP being absorbed further within the UN

and losing some of its unique flexibility and objectivity but he is optimistic this fate can be avoided. The committee on restructuring the UN, he points out, came up with recommendations similar to his own.

Asked to comment on possible successors to himself, Strong told *World Environment Report* that his deputy, Dr. Mostafa Tolba, an Egyptian microbiologist, "is eminently qualified for the job."

In summary, Strong said that, while there are pluses and minuses in today's state of environmental affairs, "if five years ago, I had imagined that today I could go into virtually any country in the world and find environmental colleagues, find the head of state interested in the issue, proud to show what he is doing, and intent on asking UNEP's help, I would have thought it impossible. At that time, environment was talked about as a global issue. Today, it really is a global issue." JRM

## Soil Erosion Is Major Problem in the Himalayas

*KATMANDU, Nepal*—Declaring soil erosion as "enemy number one" in the Hindukush-Himalayan regions, experts attending a 13-nation conference here early this month recommended a series of urgent measures to meet the problem.

The week-long meeting was held under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) as part of its "Man and the Biosphere" series, and attracted 65 participants from Afghanistan, Australia, France, Japan, India, Iran, Pakistan, the Soviet Union, the U.S. and many UN agencies and nongovernmental organizations. China, Burma, Bhutan and Mongolia did not send representatives.

The meeting identified "erosion of valuable top soil by human and animal activity" as the main problem demanding urgent attention and called for measures to bring about an "attitude revolution" among the inhabitants of the region, as well as among the hundreds of millions living in the plains below who are directly affected by happenings in the higher ranges.

The participants urged policy makers in the eight nations in and around the Hindukush-Himalayan mountain ranges to show "greater environmental awareness in formulating development plans" and to coordinate their activities on "regional management of watersheds and river basins."

Soil erosion is caused mainly by deforestation through increasing pressure of both human and animal populations in the hilly regions. Vast marginal and sloping lands are converted for agriculture. Overgrazing also destroys natural vegetation cover and the top soil is washed away by torrential mountain rains. This means increased silting of river beds and dams below and leads to devastating floods in the plains, as happened recently in Bihar.

R. SATAKOPAN (New Delhi)



## EPA: Excess Currency Programs Will Benefit U.S.

WASHINGTON — The Environmental Protection Agency has received an appropriation of \$4 million to carry on its Special Foreign Currency Program in fiscal 1975/76. The SFCP is a program through which EPA undertakes projects in countries where the U.S. has accrued significant amounts of counterpart funds.

Fitzhugh Green, associate administrator of EPA, explained to *World Environment Report* that the program is not a U.S. technical assistance program but that each project must have some relevance not only in the host country but also to domestic U.S. problems.

The SFCP is the only EPA foreign program to be given a specific budget line and, as such, it was specifically deprived of funding under the previous year's budget when EPA was still subject to the not-so-tender mercies of Jamie Whitten (D-Miss.) then chairman of the House Appropriations subcommittee responsible for EPA. Fortunately for the program some \$12 million in projects was already in the pipeline and it was able to keep functioning. This year's restoration of funding came about when the subcommittee chairmanship passed to Edward Boland (D-Mass.)

Green points out that the source of funding for this program is finite because the days of selling U.S. products for non-negotiable currencies are over. Today's foreign policy, according to Green, emphasizes interdependent, multilateral aid programs.

Five countries — Egypt, India, Pakistan, Poland and Tunisia — now qualify as excess currency countries. Yugoslavia has been included in the program, but is no longer in that category. Until recently it has not been possible to carry on projects under the excess currency program in Egypt, Pakistan or India. But several projects are recently underway in Egypt, and discussions are now being held with Pakistan and India.

Referring to the India discussions, Fitzhugh Green told *World Environment Report* that "we are hopeful the two governments will soon be working jointly on environmental research programs." India has not accepted excess currency programs for over four years; the current discussions aimed at renewing them result from an agreement negotiated by Daniel Moynihan.

One big plus in working with countries like Egypt, Pakistan and India, according to Dr. Donald Oakley, director of EPA's International Technology Division, is that these countries have "a vast reservoir of U.S. trained scientists who know how we think."

Probably the best known of the SFCP projects is the Aswan dam study, which is now in the ninth month of a five-year program budgeted at \$200,000 in counterpart funds per year. Managing the project is Dr. K. H. Mancy a U.S.-born Egyptian from the University of Michigan. His counterpart is Dr. F. Ramadan of the Egyptian Academy of Scientific Research and Technology in Cairo.

The project is two-phased: the first aim is to develop

a Nile River information center that will integrate the efforts of a number of research teams now working on the problems. As part of this program, advanced information handling techniques are being applied to the mass of Nile data accumulated over the past 50 to 100 years. Working on the data handling program is Dr. R. Deininger of the University of Michigan.

The other phase of the program is to monitor the effects of the dam on the lake above it and on the river below. Among the lake effects being studied, according to Dr. Oakley, are the public health aspects, such as the spread of schistosomiasis, the increase in rainfall, the

### A Program with Russia too...

WASHINGTON — In addition to the excess currency programs discussed on this page, the US also has several significant cooperative bilateral programs in the environmental field. One of the biggest of these — the US-USSR Joint Committee on Cooperation in the Field of Environmental protection — is holding its fourth annual meeting here this week. More details will appear in the next issue of *World Environment Report*.

The US-USSR program includes some 39 projects involving 11 different agencies of the US government. The US chairman is Russell E. Train, EPA administrator, and the executive secretary is Dr. William A. Brown. Chairman of the USSR side is Academician Yuri A. Izrael, chief of his country's Hydrometeorological Service.

At a meeting in Moscow in June, Train and Izrael agreed that significant progress is continuing to be made under the agreement. David Strother, of EPA's Office of International Activities, told *World Environment Report* that the program has progressed from the phase of exchanging data and visiting facilities into the phase of actual participation in joint activities.

For example, US scientists took part in three Soviet research cruises during 1975: one to study whales and other marine mammals in the eastern Pacific, one in the Gulf Stream to study the effects of marine pollution on the primary production of phytoplankton; one at the Kurile Trench north of Japan to study tsunami prediction.

The US also participated in the installation of a seismic network around the giant earthen Nurek dam in Tadzhikistan, a highly seismic region, to study earthquake prediction.

In other projects there was joint comparison of sulphur dioxide monitors and a joint balloon experiment on stratospheric aerosols.



creation of new fishing resources and physical factors such as temperature and sedimentation. Present data suggest the dam will fill with sediment in less than 100 years, Dr. Oakley said.

Below the dam, the effects being studied relate mainly to the fact the river no longer carries the load of silt that used to fertilize downstream crops. This means that farmers must apply more fertilizer, with the attendant runoff and stream contamination problems. At the seacoast, the reduction in silting is causing the shoreline to recede by 50 to 60 ft. per year. In other areas, the dam has caused waterlogging of lands that had been expected to become tillable.

The SFCP program is staffed almost entirely by Egyptian experts, Dr. Oakley said, but a good many of them were trained in the U.S. A number of other U.S. agencies are working on Aswan problems as well, including the Corps of Engineers and the Departments of Interior and Agriculture. The Ford Foundation is also active.

Some of the greatest benefits to the U.S. are likely to come out of the Polish program, Dr. Oakley believes. This program involves some 25 projects which are coordinated on the Polish side by the country's Ministry of Land, Economy and the Environment. About 12 of these are water-related projects, including a study of how the heavily polluted Vistula River affects the shallow tidal basin of the Baltic into which it flows, and work on eight wastewater treatment plants.

However, perhaps most important is the work related to the state-owned open-pit coal mining operation "Poltegor." Poland is the world's third largest exporter of coal and, according to Dr. Oakley, its techniques for handling the environmental aspects of strip mining are superior to those used in North America. Therefore, the SFCP program has several projects in this area, including a study of how the Poles stabilize spoil stacks with vegetation and how they deal with acid mine drainage. These projects were discussed at a U.S.-Poland mining symposium in Denver last May, and, Dr. Oakley said, some of the work is already finding application in that part of the country and in West Virginia.

Fitzhugh Green emphasized that EPA is working with topflight people in Poland and that "they are adding zloty for zloty with us" to insure the worth of the projects.

In Pakistan, EPA is discussing a project to study the recovery of useful materials — fats and protein — from sewage for use in soaps or as animal feed.

Dr. Oakley said there is a wide range of potential projects with India. That country also has vast coal reserves, and EPA would like to undertake projects involving coal liquefaction and gasification, coal slurry techniques and the environmental effects of fluidized combustion boilers. Other possibilities include studies on the health effects of pesticides, the recovery of materials or energy from industrial solid wastes, and marine pollution related to offshore oil drilling near Bombay.

JRM

## Cleanup Campaign Launched In Colombian Towns and Cities

**BOGOTA**—The Colombian government is mounting a major clean-up campaign in 136 cities and towns with the help of the World Bank, the Agency for International Development (AID), the Inter-American Development Bank and the Dutch government. The Pan-American Health Organization is providing technical support for a complementary municipal garbage collection program, which is expected to serve as a pilot project for other Latin American countries.

Although Colombia's 24 million people are more evenly distributed among its cities than most Latin American nations, Bogota, the capital, still predominates. The clean-up program reflects the Lopez Michelsen administration's desire to decentralize government entities and services through the formation of 22 department (state) and municipal agencies concerned with urban hygiene. Called Acuas, these new agencies will work with the National Institute for Municipal Development, the Health Ministry and the National Institute of Special Health Programs on the ambitious five-year, \$218 million program.

Of this amount, \$8 million will be spent on a garbage collection project to equip public markets and slaughter houses in towns with over 2,500 people with garbage trucks and sewage facilities. Hygienic conditions in most open-air markets are seriously lacking, with no running water or garbage collection, and refuse is left to rot in enormous piles next to the market site.

The World Bank is financing the garbage collection program as well as 50 per cent of a sewage construction project costing \$107 million for 14 cities and 60 smaller towns. Negotiations are underway with the Colombian government for a further \$4.6 million for rural aqueducts.

AID is financing a \$10 million program for sewage systems in 55 towns, while the Dutch government is providing \$2.4 million for aqueducts in the Caribbean coastal region. The Inter-American Development Bank is lending \$44 million for sewage systems in towns with 2,500 to 7,000 inhabitants. The Colombian government is spending an additional \$42 million. PENNY LERNOUX

Aluminum (continued from page 2):

effective manner. Finally, they agreed, a mechanism should be established within UNEP for regular reporting by industry, governments and relevant intergovernmental organizations of progress made in implementing the actions proposed by the Paris meeting.

It was suggested that such statements be bi-annual, completed not later than the end of December of the reporting period, with a first report in December of 1977. These reports would permit all parties to examine how the industry and governments are keeping their commitments.

WILLIAM MAHONEY



## Briefs . . .

### Research is Underway on West German Ocean Platform

Oceanographic and meteorological experiments began late last month aboard the new West German stationary North Sea Research Platform. Construction of the platform cost the West German government about \$26 million.

The platform will be the central station for a network of oceanographic/meteorological stations scattered throughout the North and Baltic Seas and will serve as a base from which scientists, living aboard, can carry out a varied program. It will also be used for in situ testing of systems, equipment, components and materials and to measure the stress on the platform itself under different conditions.

According to a spokesman for the Federal Research and Technology Ministry, the platform will make it possible for the first time to collect data in this part of the North Sea over a period of years under all weather conditions. The fact that scientists are able to remain on board and evaluate data under the worst of sea conditions is seen as creating new research opportunities.

### Pursuit of Riches Blamed for Latin American Problems

A lack of political responsibility and the search for quick riches were blamed for ecological destruction in Latin America by scientists attending a meeting of the Pan-American Institute of Geography and History in Quito, Ecuador. The scientists urged the adoption of ecological codes by Latin American governments, citing Colombia's recent legislation (*WER*, Feb. 3, p.2) as a model. They also warned against

the importation of foreign technology and products harmful to the environment, such as insecticides that "only cause more problems."

The delegates agreed that low living standards are rarely responsible for the environment's destruction. "We are facing problems of a generalized poverty that limits the human landscape with malnutrition, the lack of education, poor use of soil, erosion and deforestation," said Julio Carrizosa Umana, director of Colombia's wildlife service.

Among the delegates' recommendations to Latin American governments were education programs, studies of agricultural pests and their biological control, an increase in urban parks and planning to avoid congestion and to improve such public services as electricity and running water.

### Caribbean Island Develops Its Geothermal Energy

Drilling is continuing on the Caribbean Windward island of St. Lucia following the discovery of commercial amounts of geothermal energy. Drilling has reached 1,300 feet, yielding steam at 225°C and 350 to 360 lb./sq. in.

One byproduct of the drilling has been the tapping of a source of underground hot water which technicians say will flow indefinitely. The water emerges at 49°C from a 1.25 in. shaft sunk to 130 feet on the perimeter of the steam well site. Samples sent to London have been described as tasting like mineral water. Flow from the experimental bore is estimated at 10,000 gal./day, and the water is being dammed for use in powering the drilling rig.

A decision is expected shortly regarding the formation of a company to exploit the geothermal resource. It is understood the St. Lucia government will retain a controlling interest. Financing is being sought from the Caribbean Development Bank, the Commonwealth Development Corporation, Venezuela and CARICOM member nations.

### Japanese Claim System for Extracting Energy from Waves

The Maritime Science and Engineering Center in Yokosuka, Japan, says it has devised a practical system to generate electricity through the motion of the ocean's waves. The Center claims to have tested a successful model of a buoy housing a generating system. Sea water surging through the buoy compresses air inside, driving an electric generator. The Center plans to construct a 510-ton buoy capable of generating 2,000 kw.

### Southeast Asian Energy Meet Slated for Next Year

The Association of Southeast Asian Nations (ASEAN) will hold a major energy conference next year. No date has been fixed, but Hong Kong is bidding to host the meeting. Primary aim is to bring together nations in the region to discuss development of energy resources — particularly deep-sea oil exploitation in the South China sea. Nations in the area want to avoid conflicts over this sea-bed resource, as happened among the countries involved in oil exploration in the North Sea. It is hoped South Vietnam, Cambodia and perhaps China will attend the conference.

### Argentina Seeks To Control Leather Tanning Pollution

Argentina's National Institute of Science and Hydro Technology is studying ways to reduce water pollution from the country's large leather tanning industry. Metropolitan Buenos Aires alone has over 200 leather tanning companies. They discharge wastes into shallow streams, killing fish and preventing recreational use of the waterways. The tanneries also use a tremendous amount of water, causing a serious drain on groundwater reserves.

The scientists hope to come up



with new techniques for reducing water consumption by the industry, a way of recovering valuable chemicals from the wastes, and a way of purifying harmful effluents economically.

A model plan due by mid-1976, is to be presented to the National Leather Tanning Council.

### Ireland Cancels Plans for First Nuclear Power Plant

Economic problems have forced cancellation of plans for Ireland's first nuclear power plant, which was to have been built at Carnsore Point in County Wexford. According to James Kelly, chief executive of the Electricity Supply Board, the cancellation results from a reduced demand for electricity because of the recession, and from problems in arranging long-term financing for the project. The plant had also been opposed by environmental groups. Kelly said the plan could be re-activated if the situation improves, but

in the meantime, the Board is preparing plans for a major coal-burning installation.

### Air Monitors for Buenos Aires

Several air pollution monitors have been installed in Buenos Aires as part of the Argentine government's pollution control program. Sponsored by the Ministry of Economy's Natural Resources and Environment Secretariat, the experiment will last for 15 weeks. The monitors are measuring sulfur and nitrogen oxides, ozone and particulates. Findings will be analyzed by the National Chemistry Institute.

### Jamaica Plans "Micro Dams"

Cuba will assist Jamaica in building a series of "microdams" to store water for crops and livestock during droughts. The Jamaican government intends to build the dams as low-cost, low-technology water catchment facilities wherever feasible across the island. It is under-

stood the system, common in Cuba, so impressed Jamaican Prime Minister Michael Manley during a recent visit that discussions were held on Cuban technical assistance. No mention has yet been made of possible financing sources, but it is understood Cuba received substantial help from Bulgaria.

### Colombia Clamps Down on Dynamite Fishing

The Colombian Wildlife service *INDERENA* has received \$45,000 from the Ministry of Agriculture for a campaign against the use of dynamite by fishermen in the Bay of Cartagena, one of South America's most beautiful natural harbors and a major tourist attraction (*WER*, May 26, p.5).

The service will purchase three launches and arms to enable it to enforce laws prohibiting dynamite. The local fishermen have destroyed most of the bay's fish life and surrounding coral and frequently endanger swimmers.

## Calendar...

**November 3-7**—Design Criteria for Urban Water Supply Systems. Geneva. Sponsored by World Health Organization.

**November 3-7**—International Symposium on Biological Effects of Low-Level Radiation on Man and His Environment. Chicago. Sponsored by the International Atomic Energy Agency.

**November 4-6**—Annual meeting of the International Water Conference. Pittsburgh. Sponsored by Engineers' Society of Western Pennsylvania.

**November 4-7**—International Symposium on Industrial Toxicology. Lucknow, India. Sponsored by the Industrial Toxicology Research Center.

**November 8-12**—The National Whale Symposium. Bloomington, Indiana. Sponsored by the World Wildlife Fund, Sierra Club, Indiana University, etc.

**November 10-20**—Desulphurization of Fuels and Combustion Gases. Washington. Sponsored by Economic Commission for Europe.

**December 1-5**—Seminar on Housing Tomorrow. Athens. Sponsored by the UN Economic Commission for Europe.

**December 8-11**—Symposium on Unification of Equipment for Water Purification Systems. Sofia, Bulgaria. Sponsored by the Council for Mutual Economic Assistance (Moscow).

**December 9-12**—Meeting on Methodology of Sampling and Analysis of Persistent Pollutants in Human Tissues and Fluids. Geneva. Sponsored by the World Health Organization.

**December 15-19**—Advisory Group on Radiation Protection of the Public in the Event of Radiation Accidents. Teheran. Sponsored by the International Atomic Energy Agency.

**December 15-16**—Ad Hoc Meeting of Experts for the Study of Production of Engineering Equipment for Prevention Pollution. Geneva. Sponsored by the Economic Commission for Europe.

**January 6-9**—Ad Hoc Meeting on Statistics Concerning the Use of Energy in Transport. Geneva. Sponsored by UN Economic Commission for Europe.

**January 12-16**—Symposium on Coal Gasification and Liquefaction. Dusseldorf. Sponsored by UN Economic Commission for Europe.





# World Environment Report

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## Information System: EPA Officially Opens Its IRS Focal Point

WASHINGTON — The Environmental Protection Agency last week formally opened its national focal point for the International Referral System for Sources of Environmental Information (IRS) being established by the United Nations Environment Programme (UNEP) (*WER*, April 14, p.1, Feb. 17, p.3).

The EPA focal point will be the U.S. center for gathering data on national sources of environmental information and transmitting an inventory of those sources to the central unit at UNEP's Nairobi headquarters. The data is coded in an internationally standardized form and computerized. The national centers will also be able to query the central data bank.

In remarks prepared for the opening, EPA Administrator Russell Train hailed IRS as "a good nuts and bolts UN environment program," and called it "the first practical activity, resulting from Stockholm, to reach the final stages of completion." Presiding at the opening ceremonies was Fitzhugh Green, associate administrator of EPA.

Christian Herter, Jr., Deputy Assistant Secretary of State for Environment and Population, said there has been a continuous and growing demand for environmental information since the 1972 Stockholm conference and there is an extraordinary amount of information available that could answer this demand. It was in recognition of the need to draw these two threads together, he said that the State Department designated EPA as the IRS focal point.

Noel Brown, chief of UNEP's New York Liaison Office, pointed out how significant the IRS will be in answering the special needs of the Third World countries, particularly in developing the knowhow these countries must have if UN plans for a new economic order are to progress. He said he hopes the U.S. focal point will become a model and will serve to train managers for other centers elsewhere.

Dr. Brown added that he expects the IRS system to expand to the point where it serves many components of the UN system itself, particularly those dealing with population, food, habitation and water problems.

Alvin Alm, EPA's assistant administrator for planning and management, under whose direction the focal point will function as part of the agency's library system, described four functions for the center: (1) to pro-

mote exchange of environment information; (2) to develop a national register of sources of environmental information; (3) to coordinate linkages among U.S. federal agencies on environmental matters; (4) to become a source in the U.S. of information on UNEP and the IRS system.

The agency is already gathering information for storage in the national register and for transmission to the IRS central registry in Geneva. EPA will at some point issue a national directory based on the IRS listings.

The official in direct charge of the IRS unit at EPA is William Bennett.

In gathering data for the focal point, EPA sent questionnaires to the appropriate federal agencies. So far, approximately 100 sources have been recorded within EPA itself, the National Oceanographic and Atmospheric Administration (NOAA), the Department of Housing and Urban Development and the Department of the Interior. Non-governmental listings include the Center for International Environment Information and a private consultant firm.

EPA is now canvassing state and local government agencies, having sent out a mailing at the end of September, and is holding discussions with various trade associations. EPA will not, for the time being, seek out individual firms in the private sector for listing, but is concentrating instead on trade associations. Discussions are far along with groups representing the steel and the pulp and paper industries.

However, individual firms or institutions will be sent questionnaires on request. Under the IRS system, it is permissible to charge for information provided by a source.

JRM

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## Argentina and Brazil Dispute Over Detergent Foam

*SAO PAULO, Brazil* — The latest plague to hit this pollution-ridden city is a blanket of suds that are dispersed by the wind over some of the suburbs. When the wind is blowing in a certain direction, the brown, smelly foam covers streets, sidewalks and yards near the Tiete River. It forms a blanket like dirty snow but it doesn't melt in the sun and must be washed away with water. Even then, a stench remains.

The suds are formed on the Tiete apparently from an overaccumulation of detergents in both raw municipal sewage and industrial wastes that are dumped into it. The sticky suds form an almost permanent blanket on the river, where they pick up other impurities.

Meanwhile, Argentine officials have become alarmed at reports of this mess, fearing that the wastes could be carried down into Argentina. The Tiete is tributary to the Parana and Plate Rivers.

Early this month Argentina's Secretary of the Environment Lucas A. Tortorelli asked the Foreign Ministry to obtain full details from the Argentine Consul in the state of Sao Paulo. Reports in Argentina are that the foam results from a massive dumping from an industrial complex 40 km from Sao Paulo and that other wastes high in toxic lead and mercury have also been dumped.

Brazil's Environment Secretary Paulo Nogueira Neto assured the Argentinians that four hydroelectric dams between Brazil and Argentina will slow the flow of contaminated waters for six months, during which time the suds would decompose. He did not mention the other contaminants, however.

Argentine experts have expressed concern that thousands of fish could die from the lead and mercury, should these contaminants reach the Parana and Plate. Argentine authorities from the National Resources and Environment Secretariat are taking samples of water on the upper Parana and passing the analyses along to officials in Paraguay, Uruguay, Bolivia and Brazil as well.

Exploitation of these common waterways is a continuing bone of contention between Brazil and Argentina. **GEORGE HAWRYLSHYN AND JANE BERGER**

## Persian Gulf States Are Improving Hydroponics Methods

*HAWALLI, Kuwait* — This country and the other Persian Gulf states are pioneering the development of hydroponics — the technique of soil-less agriculture.

At the experimental farm in Kuwait, the plants are grown in shallow concrete beds filled with gravel. They require much less water than they would in open fields. Pipes supply a chemically enriched water to the beds,

which is recirculated to avoid waste. This requires 90 per cent less water than conventional irrigation methods.

The plants also grow quickly and can be harvested all year around. Within three weeks of planting, squash, for example, are ready to eat.

Beyond the saving of scarce water, other advantages the gulf states see to hydroponics is that they can reduce their dependence on other countries for food supplies, and that they need not worry about importing diseases along with imported foods.

The head of Kuwait's Department of Agriculture told *World Environment Report* that the technique is expensive and is not yet economical. However there are great hopes for reducing costs in the future, and ways to increase yields have already been discovered at the test farm.

For example, the experimenters have found that they could decrease the concentration of the chemical nutrient stream to one-fourth what they had thought necessary, and the plants actually increased their yield and decreased their susceptibility to disease. This means a 75 per cent savings in the costs of chemicals, the biggest cost after labor. The test farm is continuing to study cost cutting methods for hydroponics in cooperation with the UN's Food and Agriculture Organization (FAO).

For example, the experiments will study the use of cheap plastic greenhouses instead of the costly fiber glass ones now used.

A visitor to the hydroponics farm sees row upon row of tomato plants, broken here and there with healthy roses and carnations. The vegetables grow in tall metal tubes and are sprayed periodically with the nutrient solution. The vegetables seem to taste better than field-grown ones.

Healthy green leaves peer from the metal and glass home, their roots never having touched the ground.

**MUSA DAJANY**

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## Bulletin:

### Maurice Strong to Leave UNEP Post at End of Year

*NEW YORK*—Maurice F. Strong, the Canadian who has headed the United Nations Environment Programme (UNEP) since its inception, is leaving his post at the end of December. As *WER* goes to press, further details on Strong's decision to leave UNEP are not available.

Strong was elected Executive Director of UNEP by the UN General Assembly in December, 1972 for a four year term. He was the only candidate proposed for the post after having achieved international acclaim for his organization of the successful UN Conference on the Human Environment which was held in Stockholm that year. Out of that conference, attended by 113 countries, came UNEP and an agreed Action Plan to deal with global environmental problems.

UNEP was established in Nairobi in 1973 and has gradually built up a staff which now numbers over 250. In the last two years, it has funded over 250 environment projects, including Earthwatch, the first comprehensive global monitoring system, an Action Plan to save the Mediterranean, and an international referral system that links users and sources of environmental information in different countries.

At the present time, Strong's successor has not yet been announced, but it is assumed that the Deputy Executive, Dr. Mostafa Tolba, an Egyptian micro-biologist will serve as Acting Director.



## Solid Wastes: It's Best To Stop Them at the Source

GENEVA—Participants in a Seminar on the Collection, Disposal, Treatment and Recycling of Solid Wastes last month suggested that the main solution to solid waste problems lies in preventing wastes at the source.

Held in Hamburg, West Germany, the seminar was sponsored by the United Nations' Economic Commission for Europe (ECE), which is headquartered here. The seminar was organized by the Senior Advisors to ECE Governments on Environmental Problems, a subsidiary body.

According to the ECE, the seminar participants recognized that few really novel solid waste treatment techniques exist and that originality lies more in improved integration of all waste disposal or recycling operations.

"The participants recommended that governments promote the prevention of waste at source," the ECE announced. They also concluded that separating the various types of waste before collection is a major means of dealing with the problem, because it stimulates the economic incentive to recover. The seminar stressed the value of the "waste exchanges" that already exist in some industrialized countries, and the importance of the principle that the polluter pays.

"Although there are legal means in a large number of countries to prohibit or regulate the sales of certain products, to forbid certain manufacturing processes, or to provide economic incentives—all directed at waste reduction—practical action has been limited so far," the ECE report says.

Participants agreed that a move back to the returnable bottle has produced satisfactory results in reducing litter and the quantity of waste handled. They also found that taxes on products such as beverage containers and cars are a practical means of financing the cost of disposal and research on the waste problems they create.

In discussing the treatment of solid wastes at their source, participants recommended that ECE governments develop harmonized standards for treatment machinery, and make their environmental data internationally comparable.

With increasing shortages of materials and energy, solid waste should be seen as a resource rather than as waste, the participants stated. They recommended that governments find ways to exchange more information on the technical, economic and legal aspects of recovery, evaluate various systems of waste management and recovery, identify factors which hinder increased recovery and set out the quality requirements for secondary materials used in manufacturing.

As few industries have so far tried to find ways to use their wastes or have been forced for environmental or economic reasons to look for more-efficient uses of their raw materials, participants recommended that a joint industrial and industrial-municipal approach to solid

waste handling and management should be encouraged. They backed the development of satellite industries using the solid wastes of large enterprises as raw materials, solid waste exchange programs and markets.

WILLIAM MAHONEY

## Prospects are Good for Waste Recycle, Says Danish Expert

COPENHAGEN—The prospects for waste reclaiming industries have never been so good, according to Jan Levin, who has just been re-elected to a further two years as president of the Federation of International Recycling Industries (Bureau International de la Recuperation) (BIR).

"Yet because of the worldwide industrial slump," Levin told *World Environment Report*, "masses of scrap are piling up and creating a very big problem."

In many countries, Levin continued, including Denmark, reclamation projects to recycle raw materials are on the drawing boards, and citizens are prepared to help out by separating their household wastes into paper, glass and metal. But all over the world, he said, these plans are being held up.

In Europe there is the added problem that recyclable materials cannot be sent from Common Market countries to non-members. Sweden, for example, being outside EEC, is unable to receive EEC materials and some of her needs are being met by imports from the Soviet Union.

Levin is also managing director of Joseph Levin of Denmark, which has been in the recycling business for over a century.

In Levin's opinion, some of the environmental laws and recycling programs in the U.S. are models for the rest of the world. "But," he pointed out, "small countries cannot always take advantage of the research and know-how of a body like the Center for Resource Recovery in Washington." Large countries overlook the difficulty for small or undeveloped countries to buy large and costly waste reduction machinery. Only recently has a car crusher been developed to handle small cars like the Volkswagen, he added.

The problem of vital raw materials running out is a major one, Levin believes, pointing out that estimated aluminum reserves may not exceed 30 years, and iron 90 years. Therefore reclamation and recycle are vital.

The BIR is a non-profit organization that constitutes an international marketplace for recyclable materials and a comprehensive center of study and research. Its aim is to make reclaimed materials available for industry where and when they are needed. Its headquarters address is Place du Samedi 13, 100 Brussels, Belgium.

CONSTANCE CORK



## Special Report: UNEP's New York Office Plays Diverse Role

**NEW YORK** — One handicap environmental professionals in North America and in other industrialized regions face in dealing with the UN Environment Programme (UNEP) is its remote location in Nairobi, the first such UN headquarters in a third world country.

To overcome this problem, UNEP has established liaison offices in New York and elsewhere.

Noel J. Brown, the young Jamaican diplomat who heads the New York liaison office, sees the Nairobi problem as not so much one of physical distance as it is a psychological gap. Africa is not often in the thoughts of North Americans, and the UNEP program therefore lacks visibility.

The function of his office, Brown explains, is to keep that program visible and influential in an area that is not only a hub of action on environmental problems, but also the location of the UN Headquarters itself.

After some initial delay in getting established, Brown told *World Environment Report*, he now feels he has most of what he has asked for in the way of staff and facilities to discharge the office's responsibilities.

The staff of the New York office, now about 15 people, is made up of multidisciplinary generalists ranging from liberal arts and law to nuclear physicists. The office is also able to draw upon the expertise of the other UN agencies located in New York. Brown summarizes the functions of his office as follows:

- Providing information to the UN, to North American institutions and to the mass media on the UNEP program;
- Acting as liaison between UNEP on the one hand and the UN missions, UN Secretariat and North American industry and environmental specialists on the other;
- Representing UNEP in major environmental activities and meetings and with the academic community throughout North America;
- Coordinating environmental activities in North America as they relate to UNEP;
- Providing program support from North America for UNEP headquarters;
- Serving as the North American office for Maurice Strong, UNEP's executive director.

**Diplomatic Center** — a major function of the New York liaison office is, of course, to maintain contact with over one hundred missions at the UN.

Brown is a career UN official who, prior to taking over UNEP's New York office, was a political affairs officer in the UN's Department of Political and Security Council affairs, and special assistant to its director. He holds a Master's degree from Georgetown University and a Ph.D. from Yale in international law. He is a visiting professor at the University of the West Indies and at Hunter College.

At the request of Maurice Strong, heads of most of the UN missions have designated officers in charge of environment to act as focal points in dealing with the liaison office. This means, Brown said, that he now has a network of "environmental diplomats" with whom he can deal, either formally or informally, on issues of interest to UNEP.

At present UNEP is closely observing UN efforts to come up with a "New Economic Order" which will change the relationships between the industrialized and the developing nations. UNEP's task, according to Brown is to make sure the new order is not the same as the old order in ignoring environmental considerations until it is too late and trying to treat them as an add-on issue. This has become the major focus of Maurice Strong's activities during his frequent visits to New York.

The signs are encouraging so far, Brown believes, in that the preliminary documents on the New Order have included environment as a significant issue. UNEP hopes this will evolve into a new concept of development different from the old concept of growth — a total social concept in which the entire quality of life will be considered, not just material development. This is a logical evolution to hope for, Brown says, one in which environmental protection and development will proceed in lockstep.

**Industry Program** — The liaison office is also the contact point for U.S. and Canadian industry and represents UNEP's Industry Program office in Paris in its dealings with North America. Beyond that, Brown points out, his office has established a "major roster of consultancies" through industry-affiliated groups by which UNEP can have access to North American expertise. One example of this program is the effort to catalog solar and wind energy technology for use in UNEP's experimental rural energy centers in Africa, Asia and Latin America.

The office will also respond to requests from an individual industry on how to obtain access to appropriate environmental officers in other countries.

The office is trying to prepare a list of key environ-



## UNEP

mental groups in the New York region and across North America. But Brown would like to see some sort of central clearing house for North American environmental groups so that he could ensure all relevant parties are receiving UNEP documents.

To further this idea, he is pursuing the concept of "UNEP Collections" in various key libraries. While there are now several libraries serving as depositories for UN material, Brown believes the UNEP material tends to become lost.

Another important area that requires work, Brown believes, is the question of media relations and public information. His office has recently added a full-time press officer to supplement the work of the Headquarters information office and to cultivate relationships with the working press of North America. New York is a difficult media arena in which to compete, Brown believes, particularly now that some of the environmental movement's passion has been converted instead into scientific work. The most important thing is to establish in the minds of the press his office's credentials as a reliable source of technical environmental expertise and information.

Brown intends to extend the information program to encompass the campus press and other youth groups, and is exploring a variety of methods, such as record albums and endorsements by name artists, to get the UNEP message across.

**Action Centers** — Brown would like to ensure that UNEP is able to utilize to the fullest the "tremendous intellectual ferment" that is going on in the U.S. and Canada in the environmental field. One way he is pursuing to do this is the concept of Environmental Action Centers. "North America is environmentally one of the richest areas on earth," he points out, "with terrain including temperate forests, tropical forests, grasslands, desert, mountains and sea coasts."

The Action Center program would be similar to the bilateral biosphere program recently established by the U.S. and the U.S.S.R. Unlike this program, however, Brown believes the centers should be open to the public. The purpose of the centers would be to allow the "urban mindset" to become reoriented to the natural order. He is already holding discussions with private groups on setting up various sites for these centers.

JRM

## New Human Ailments Blamed on Atmospheric Contamination

**MEXICO CITY** — Human beings may have to undergo genetic changes to survive against increasing atmospheric contamination, a group of Mexican geneticists has warned. It may become a case of only the strongest surviving, said the scientists during a national health symposium in Mexico City.

Besides the obvious hazards of automobile exhaust and factory smoke, the scientists said tiny plant growths are being produced by the atmospheric contamination. These may give rise to new human ailments and probably will require more sophisticated treatment of known diseases and ailments.

An example of a "new" detriment to human health is an airborne fungus which lodges in the lungs and aggravates asthma, they said. Probably 90 percent of this capital's nearly nine million inhabitants has some form of parasite, some of them airborne, they said.

The number of allergy cases per capita has grown with Mexico City's industrialization and pollution and now, 15 percent of the population suffers from some form of allergy, the scientists said.

An estimated 10 per cent of the school population suffers from deafness or semi-deafness, their studies show, and they attribute that situation, in large part, to the noise of the city.

Presently, Mexican geneticists are conducting studies on babies born with an apparently congenital defect to

determine if atmospheric contamination may be traced in any way to the defects. Such studies will take years before any solid conclusions are reached, doctors said.

Among those participating in the health meeting and discussing the contamination aspects of health were Dr. Israel Rosemberg, genetic researcher of the National Mexican Social Security Institute and Dr. Carlos Gual, former director of the Academy of Scientific Investigation.

KATHERINE HATCH

## Pesticide Poisoning Blamed in Deaths of 13 Brazilian Children

**SAO PAULO, Brazil** — Laboratory tests here revealed that the deaths of 13 children in the state of Bahia may have been caused by an aldrin-based insecticide. Officially, the lab would announce only that the children were poisoned and that traces of aldrin were found in the liver of one of the children.

The children all came from the town of Ibirapua and all died within a short period of time. Apparently they died after following the local custom of eating ants. Newspapers reported that the anthill had either been sprayed with insecticide, or the aldrin had been sprayed on some crop the ants ate.

Aldrin and its relative dieldrin have long been the subject of controversy in the U.S. A year ago, EPA ordered a ban on their production because of evidence they cause cancer in mice and rats.



## Briefs . . .

### Japanese Institute Reclaiming Desert in Abu Dhabi

Japan's Desert Development Institute is undertaking a three-year desert reclamation project in the Sulaymat district of Abu Dhabi on the Persian Gulf. To begin this month, the project will create farmland out of desert through the use of a specially constructed asphalt carpet. The Institute will build a five-acre experimental farm and plant it with grasses, trees and vegetables.

The area's limited water resources will be utilized fully by means of the three-millimeter carpet laid under the sand at a depth of one meter. This will prevent irrigation water from soaking into the sand and will block salt from seeping upward from the subsoil.

### Abu Dhabi Lets Water Main Job

Abu Dhabi is to get a new water main system. The contract for installing 70 miles of new pipe has been awarded to two U.S. firms—Paul N. Howard Co., of Greensboro, N.C., and the Herbert Construction Co. of Birmingham, Ala. It is the first major water works job in the Middle East to be awarded to U.S. companies.

### Indonesia Says Showa Maru Skipper was Negligent

The Indonesian Shipping Arbitration Committee has concluded that negligence on the part of its skipper was the main cause of the grounding of the giant Japanese tanker, Showa Maru, in the Malacca Strait early this year. The captain mistook Karang Helen waters for Karang Banteng, according to the committee, and relied too heavily on his radar. The committee suggested that giant tankers be banned from the Singa-

pore and Malacca straits. The Showa Maru incident in January (*WER*, March 31, p. 5) led Indonesia to claim \$18 million in damages.

The state-owned Indonesian oil company, Pertamina, has acquired skimmers, dispersants and sand to deal with future spills resulting from increased off-shore prospecting and tanker traffic.

### Denmark Buys Oil-Spill Vessel

A catamaran-type vessel, to be manned by the Danish Navy, will be ready to deal with oil spills next year. It will operate in the Oeresund between Denmark and Sweden, and the Great Belt between the Island of Zealand and the Jutland Peninsula. The vessel is being built by Lockheed Missiles and Space Co. at a cost of \$117,000.

According to the Danish Environment Ministry, the vessel will be able to suck up 760 liters of oil per minute, most of which will be reusable. The Ministry is also studying means of dealing with open sea spills, such as in the North Sea, but this is more costly and would require approval by Parliament.

### Britain Studies Tree Management

Britain's Department of the Environment has commissioned two five-year research programs on tree management and cultivation. Included will be a study of the best type of trees to be grown on industrial waste heaps and other unfavorable sites. Improved methods of planting and aftercare, including control of decay and disease, will be sought.

The research is to be carried out by the Forestry Commission and the Natural Environment Research Council. The Commission will also provide an information and advisory service to local authorities and other bodies likely to be concerned with tree planting and landscaping.

### Chilean Fishermen Protest Freighter's Oil Spill

Fishermen of Valparaiso province in Chile are taking legal action against the "Northern Breeze," a Liberian freighter that ran aground off the coast at Quintero last month. Oil leaks from the ship, said to be carrying 400 tons of fuel, spread through eight seaside resorts, killing fish, sea gulls and ducks. The ship ran aground after mistaking Quintero's bay for Valparaiso; it stuck in rocks and was split in two by waves.

Although this spill is much smaller than that from the "Metula," a supertanker that ran aground in the Magellan Straits last year, it took place in a much more populated area. Many fishermen in the area make their livings from shell fish.

The Chilean state oil agency (ENAP) had earlier ordered an ecological survey of the area to determine the effects of industrial wastes. Therefore, a baseline is available from which to measure the effects of the Northern Breeze spill.

### Noise Control at Athens Airport

The Greek government has announced plans to reduce noise from the Athens airport, which is in a fashionable seaside resort 10 km from the city. Local residents have long pressured the government for action on the noise problem.

The government has already decided to transfer the airport to another location because the present one is inadequate for future needs. But until then, the Ministry of Transport has adopted the following series of noise-control measures: planes must turn toward the sea immediately after take-off; planes must not fly low over inhabited areas, instead making their descent more immediately over the airport; planes must use other Greek airports when making fueling stopovers between midnight and 5 am; efforts will be made to avoid the arrival or departure of charter flights after midnight.



## Briefs:

**New Planting Method Saves Both Energy and Time**

Spring barley has been grown for five successive years in experimental fields at Leeds University in England on soil that has not been ploughed. The barley is planted by directly drilling seeds into the ground. The method requires less fuel, saving as much as 80 percent of the tractor power usually required, and is faster. It is being used increasingly by British farmers, especially with winter wheat, because they can take advantage of short spells of good weather for planting.

Scientists at the University had expected the unploughed soil to restrict root development but now surmise earthworm activity is enough to prevent this. At the experimental plot, there are three methods of cultivation, including the direct drilling, which are tested in a range of soil types.

**New Zealand Overrides Opposition To Huge Dam Project**

The New Zealand government has decided to ignore the recommendations of its own environmental audit commission and to press on with a \$500 million, six-dam hydroelectric project that will flood the fruit-growing and residential Clutha Valley. The Clutha scheme, on New Zealand's South Island, follows several such hydroelectric installations on the North Island river Waikato, but will be the first in the country to submerge part of a town. Historic Cromwell (population 1,000) will lose its business section and older streets and houses under the waters. The audit commission, which was set up in 1972 by the previous National Party government, recommended revisions in the Clutha plans.

Prime Minister Bill Rowling, under whose Labour government

the audit commission has evolved into a separate department with a staff of 25 experts, denied that the commission had been cold-shouldered and said it had influenced the decision to the point where the project will now not flood so much of the valley as originally planned. But one major New Zealand newspaper (The Dominion) commented that, if the commission has indeed survived, it is "in the intensive care ward."

**Pakistan Reforestation Program To Prevent Silting**

The government of Pakistan is planting 22.8 million trees during the current monsoon rainy season as part of a massive reforestation program. According to Rafi Rasa, minister for production and town planning, only about four per cent of Pakistan's 200 million acres is forested, which compares poorly with over 30 per cent in developed nations, particularly when 65 per cent of Pakistan is range land.

A major objective of the reforestation program is to prevent silting of the country's huge dams—such as Tarbela, the world's largest earth-filled dam—and the extensive network of canals and rivers.

**Clean Power Plant Process Announced in Britain**

A power plant that can use the cheapest and dirtiest grades of solid fuel and yet is environmentally clean is expected to be available shortly on a commercial basis.

Two leading companies with expertise in fluidized bed combustion techniques have announced a joint enterprise to develop such a plant in Britain. The fluidized technique allows sulfur and nitrogen oxide emissions to be minimized.

Babcock & Wilcox, known internationally for power plant equipment, has joined in this project with Combustion Systems, Ltd., which

was formed jointly by Britain's National Coal Board, British Petroleum and the National Research Development Corporation. The firms have also been working with similar interests in the U.S. and Canada.

**Denmark Seeks Ban on Dumping From Oil Drilling Rigs**

Denmark's Fishing Ministry is trying to work out an international agreement banning dumping in the sea of metal boring wastes from oil platforms in the North Sea. Complaints by Danish fishermen of serious damage to their nets by the wastes will be aired at a meeting in London this winter, officials said.

They hope for a binding definition of the responsibility of oil companies for damage to nets. One Danish vessel recently suffered \$17,000 damage to its nets; the oil company denied responsibility, and insurance does not cover such damage, so the fishermen had to bear the loss themselves.

The Fishing Federation of East Jutland said many skippers have given up trawling in some choice North Sea areas because of the risk. A spokesman for the Federation said that, according to the Oslo Convention on sea pollution, it is forbidden to dump metal wastes into the water. But, he added, it is impossible to control dumping from the drilling platforms.

**World Bank Loan Aids Greek Irrigation Project**

The World Bank has approved a \$40 million loan to Greece to finance an irrigation plan. The plan calls for improving irrigation on 45,000 acres in central Greece, and the cultivation of an additional 15,000 acres so far unused because of drought. After the plan is completed in three years, the per capita income in the area is expected almost to double, from \$620 per year to \$1,100.



## Briefs:

### Greek Quarries Shut Down To Improve Environment

The Greek government has ordered the shutdown of marble quarries in Athens and its suburbs. According to Minister of Industry Constantine Conofagos, 30 quarries will be closed within a year "because they are the ugliest sight in the mountains all around the city, visible to the entire population and already responsible for a great deal of forest destruction." One of the quarries shut down will be the one on Mount Pendeli, which produces the best marble in Greece. It will be re-opened on the other side of the hill.

The quarry operators have protested vehemently, but the government insists they have been offered adequate compensation.

### Brazil Pushes Alcohol-Gasoline Mixture as Motor Fuel

With the continuing rise in petroleum prices, the Brazilian government is giving top priority to a test project for mixing alcohol with gasoline. Government officials reason that, as the world's largest exporter of sugar, Brazil ought to be able to divert some of this sugar to produce alcohol as fuel. The idea is to mix 15 to 25 per cent alcohol in gasoline for cars. The country's automobile manufacturers say that only minor alterations would have to be made to enable car engines to run on such a mixture.

Government officials claim that up to 250,000 barrels of petroleum a day could be saved this way, beginning next year. But petroleum industry experts dismiss this as unrealistic, pointing out the still experimental nature of the mixture.

Also, there is question whether even Brazil has enough raw material to produce such quantities of alcohol. The government also proposes to produce alcohol from manioc and potatoes, but that is even further off because the know how and refineries don't exist.

### Solar Cookers for Brazil Interior

Preparations are underway for a solar cooking experiment in poverty stricken but sunny northeastern Brazil. Universities in the region have been testing solar cookers, and various models are now to be tried in backyards. The organizers are mostly concerned about the reception by the illiterate farmers in the interior, citing earlier failures in India and Mexico where people rejected the cookers as "the Devil's thing." One solution being considered is to introduce the cookers as part of the widespread and popular adult literacy campaign (MOBRAL).

If the cookers gain wide acceptance, they will save Brazil a lot of petroleum and firewood. Urban Brazilians mostly use gas for cooking, while rural dwellers burn firewood. Natural gas is expensive and firewood is getting scarce. In the northeast state of Ceara alone, it is estimated that 100,000 hectares of forest are devastated for firewood every year.

### Pakistan Uses High-Sulphur Coal

Because of mounting costs of imported oil and a lack of hydro power sources, Pakistan's state-owned Water and Power Development Authority has decided to build a 240-MW power station in the Dadu district that will use as fuel high-

sulphur coal from the region's Lakhra coal fields. The plant will cost an estimated \$50 million and will be designed for future expansion to 400 MW.

The Lakhra coal deposits have a reserve of about 240 million tons but have not been exploited to any great degree because of the sulphur content.

### Emission Control for Brazil Cars

Paulo Nogueira, head of Brazil's environment agency, SEMA, predicts a 25 per cent reduction in urban air pollution by 1980 through the installation of emission controls on cars. He said that, by the end of the decade, the country's automobile manufacturers will have introduced cars equipped with either catalytic converters or gas recycling systems, thus reducing the emissions by about half. Cars account for 40 to 50 per cent of the pollution in Brazilian cities, according to Nogueira.

### Only Six Bird Species Dare Visit Polluted Sao Paulo

City-wide checks in Sao Paulo show that of 200 species of birds catalogued at the turn of the century, only six species have occasionally been seen in the last two years. But even those six species are very rare and are seen only on those few days the smog lifts and brings a bit of relief to the polluted Brazilian metropolis.

Among the six species is the carrion-eating buzzard family, which thrives on garbage dumps, but which apparently finds Sao Paulo beyond its limits except for occasional scavenging forays.





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## The Mediterranean: Countries Agree on Oil Spill Center

*SAN ANTON, Malta*—Representatives of 16 of the 18 Mediterranean countries agreed here at a meeting ending Sept. 19 on the need for a regional center to combat oil pollution in the seas.

Purpose of the center will be to "deal with accidental massive oil spillage and accumulated oil pollution which presents a grave and imminent danger." The government of Malta offered to host the center, and, while this offer was favorably received, a final decision on location will be left up to a meeting of government plenipotentiaries in Barcelona next February.

The experts defined the role of the future center as exchanging information on dealing with spills, developing and maintaining a communications system, and training specialists for combatting spills. No attempt will be made for the time being to establish an operational oil-spill unit, but the possibility will be taken up in the future.

Also left unresolved is the question of financing the new center. The meeting agreed that more accurate cost estimates are required and that means of apportioning these costs should be taken up in Barcelona.

The oil-spill meeting was sponsored by the UN Environment Programme (UNEP) and the Intergovernmental Maritime Consultative Organization (IMCO), and the countries represented were Algeria, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libyan Arab Republic, Malta, Monaco, Morocco, Spain, Tunisia, Turkey and Yugoslavia.

The oil-spill meeting followed immediately after a meeting sponsored by UNEP and the Intergovernmental Oceanographic Commission at the Royal University of Malta of experts from the Mediterranean countries to discuss monitoring of oil pollution and the fate of pollutants discharged into coastal waters. This meeting adopted a proposal to drop up to 100,000 drift cards from the air to trace pollutant flow. The cards will be attached to floats and dropped from planes, probably starting next January. They will carry a questionnaire in Arabic, French and English for potential finders to fill in and return.

**UNEP Program**—The Malta meetings are the latest examples of how UNEP's Mediterranean program has moved into action following the Barcelona meeting in

January and February of this year (*WER*, Feb. 3, p. 4 and Feb. 17, p. 1). At this meeting, the governments asked UNEP to develop an action plan for cleaning the Mediterranean including making studies, drawing up programs, compiling inventories, aiding national institutions, and preparing the groundwork for next year's meeting of plenipotentiaries.

The coordinated monitoring research program has been divided into seven two-year projects under the direction of Yugoslav oceanographer, Dr. Stjepan Keckes. These are: monitoring metals (particularly mercury) in marine organisms; monitoring DDT, PCB's and other chlorinated hydrocarbons in marine organisms; effects of pollutants on marine organisms and their populations; effects on marine communities and ecosystems (these first four in conjunction with the Food and Agriculture Organization); coastal water quality programs (with the World Health Organization); coastal transport of pollutants; studies and monitoring of oil and petroleum hydrocarbons in the sea (the last two with IOC).

Each of these projects will have a network of participating institutions, from which a lead institution will be chosen to write a report for the advisory committee chaired by Dr. Keckes.

FAO held a meeting in early July to discuss its projects at which an operational document and list of interested parties were worked out. These have been sent to the governments to take action on appointments. IOC met at Malta this month (see above), and WHO has scheduled a Geneva meeting in December to discuss its project.

Total budget for the UNEP programme is almost \$2 million, and it is hoped the individual governments will also contribute.

*(Continued on next page)*

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**Legal Issues**—The legal issues were discussed at an April meeting where the draft texts of the framework convention and the protocols on cooperation to combat pollution and to prevent dumping from ships and aircraft were reviewed. These drafts have now been reviewed at UNEP headquarters in Nairobi and sent out to the governments in preparation for the February meeting in Barcelona.

In other areas, WHO has proposed a survey with the UN Industrial Development Organization of industrial and municipal sewage problems on the southern and eastern coasts of the Mediterranean, and UNEP has asked the Economic Commission for Europe (ECE) to do the same for the north coast. Preliminary discussions are underway with FAO on improving and better utilizing living resources and aquaculture.

To make sure additional new pollution load can be avoided in the future, UNEP is also considering a French proposal that would combine academics with policy makers to study the linkage between the area's environment and its future development and to study how environmental considerations can be injected into future planning. These studies would develop scenarios for the year 2000 based on current trends and try to propose alternative policies that would avoid the negative aspect of these trends. An expert meeting on these proposals is expected in November.

A regional meeting on marine parks and wetlands in the Mediterranean is scheduled for December 8-12 in Tunisia.

One interesting aspect of the Mediterranean program is that the participating countries have largely overlooked their political differences to pursue this common interest. Even the less-developed countries are participating enthusiastically along with the industrial ones. The major remaining holdout is Albania, which has so far refused even to answer letters on the issue.

FREDERICK BARRY, JENNIFER STONE

## UNEP Meeting Will Look At Problems of Aluminum Industry

**PARIS**—Environmental authorities will appeal for worldwide cooperation to "cleanse" aluminum production in a seminar to be held here Oct. 6 to 8 under the sponsorship of the United Nations Environment Programme (UNEP).

UNEP director Maurice Strong will address the group first, presenting the total environmental approach, stressing the need for international cooperation among industries and governments. Then Ian MacGregor, AMAX Chairman, will discuss environmental questions as seen by a chief executive officer of a major industry.

Three introductory reports by UNEP consultants will provide the basic approach for the seminar proceedings.

William D. Ruckelshaus, former U.S. EPA Administrator, has prepared a report outlining the present

pattern of the aluminum industry, showing why stress on environmental problems is important and considering possible future technological and economic developments.

"Hopefully one of the consequences of this seminar will be that we can learn from our mistakes and the mistakes of others," he says. "In the long run it is cheaper as well as better to anticipate the environmental consequences of our actions and undertake to control them than it is to proceed with abandon and then attempt to reclaim what has been squandered."

Ruckelshaus notes that the aluminum industry by its very nature is international, conducted by international corporations, with primary producers in 38 countries on every continent. Therefore worldwide perspective is necessary, the report says. By-products of aluminum production causing problems are as follows.

The residue from extracting alumina from bauxite since only 50 per cent of bauxite mined and processed is turned into aluminum. The residue must be disposed of in waterways or "impounded upon land."

Particulate and gas emissions from production which have detrimental effects on air quality. Emission of hydrocarbons, sulfur dioxide, carbon monoxide and fluoride can be controlled by dry or wet air pollution control systems and from 90 to 95 per cent of the impurities could be collected. This however would be very costly. Fluoride was specifically cited as presenting a special hazard.

Hazard in the working environment. Heat stress—and the need for "cooling out" rooms where workers can rest; the problems of coal tar pitch volatiles which are unhealthy to breathe.

Ruckelshaus notes that aluminum lends itself to recycling and has high scrap value. He urges much

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## Environmental Monitoring: Global Problems Assessed at Las Vegas

**LAS VEGAS, Nevada**—The world should have a new "international environmental entity" to develop the kind of overview of the state of the environment that mankind now needs but "will need even more urgently as the years go by," according to Christian Herter, Jr., U.S. Deputy Assistant Secretary of State for Environment and Population Affairs.

Herter made this call at the International Conference on Environmental Sensing and Assessment held here this month, which attracted more than 800 delegates from nearly 40 countries. Originally planned as two separate meetings—an International Symposium on Environmental Monitoring sponsored by the World Health Organization, the U.S. Environmental Protection Agency and the University of Nevada, and the Third Joint Conference on Sensing of Environmental Pollutants sponsored by nine technical societies and government agencies—the conference was consolidated with a dual theme of "practical health-related monitoring and advanced technology for assessment of environmental pollutants."

The UN Environment Programme financed the attendance at the conference by delegates from some 25 developing nations, but no UNEP officials took part in the program itself.

In his luncheon address, Herter declared there is lack of credibility on the international environment scene. Thus international decision makers do not have the unimpeachable information they need to act on such questions as the changes taking place in the upper atmosphere, the global chemical interchange between carbon dioxide and oxygen, the implications for human health, food and forest production of increased energy production and the world's climate.

Ideally, Herter continued, UNEP could become "the great intellectual force in environmental matters" but such a role is "far beyond UNEP's present capabilities." UNEP has not yet built a reputation as a credible source of information, he said, and this is the critical year for the agency to demonstrate its ability to surmount the logistical problems of its Nairobi location.

A theme commonly cited at the conference was the need for a reliable international system for monitoring and assessing pollutants. In his introductory remarks, D.S. Barth, director of EPA's Environmental Monitoring and Support Laboratory in Las Vegas, said "It is imperative that common systems for quality assurance of monitoring data be adapted by all data collectors. When this is accomplished, environmental monitoring data which are accurate and comparable may move across national or international boundaries as freely as the environmental pollutants themselves now do."

Dr. Wilson Talley, EPA's assistant administrator for research and development, reading remarks prepared for EPA Administrator Russell Train, outlined ingredients for the global environmental agenda. First, we

must "identify all potentially dangerous pollutants" and established a detailed assessment of their impact on health and welfare, then we must "identify the pathways, the transport mechanisms and chemical transformations which occur as these pollutants move and interact throughout the ecosystem," and then we need "reliable monitoring systems in all areas."

These systems must be of high quality, he added, "in terms of the initial instrumentation, assurance that the data are scientifically valid, that the data are collected in a reliable and representative fashion, that the information is assimilated so that it is of maximum use to environmental quality managers, and that the information is made quickly and easily available to other investigators."

Dr. A.S. Pavlov, assistant director general of the World Health Organization, described WHO's environmental health criteria program to assemble and assess existing information on the relationship between exposure to environmental pollutants and the effects of man's health. Some half a million chemicals are already in use, he added, with about 10,000 of these produced in annual amounts between 500,000 and one million kilograms. "From an international perspective," he said, "and also from a national point of view, the development and use of comparable measurement methodology is extremely important."

Fitzhugh Green, EPA associate administrator, outlined some of the international and bilateral environmental activities in which his agency is already involved. In early October, he revealed, EPA will inaugurate the U.S. National Focal Point of UNEP's International Referral System for Sources of Environmental Information (IRS) (*WER*, Sept. 1, p. 1), which along with the Global Environmental Monitoring System (*WER*, Sept. 15, p. 3) makes up the Earthwatch program.

International speakers on the more technical part of the conference program pointed out the special monitoring problems that exist throughout the world and how they are related to the climatic, social and economic conditions of their particular countries. Some highlights follow.

**Indian Problems**—Special circumstances in India mean special air pollution problems, which in turn mean special monitoring equipment and techniques have had to be developed. Dr. J.M. Dave, deputy director of the National Environmental Engineering Research Institute in Nagpur, told the conference that, while India is a rapidly industrializing country and is thus suffering conventional pollution problems, it also has an unusually high dust loading in its major cities due to the domestic consumption of low-grade fuels and the fine dust blown in from the dry surroundings. The ratio of particulates to sulfur dioxide is four to five times higher



in Indian cities than in developing countries, with annual means from 250 to 500 micrograms per cubic meter, and maximums above 1,000.

Other common pollutants are low, except that carbon monoxide tends to be high because of the age and poor condition of most motor vehicles.

Indian air pollution officials are hampered in their data collection, Dave said, because of the country's extremes of weather (extreme heat, low humidity, frequent dust storms), lack of trained personnel, lack of funds and lack of a domestic instrumentation industry.

Therefore, Dave's Institute has had to develop its own simple and cheap manual samplers for its monitoring network. The cities of Bombay and Calcutta have networks consisting of six to ten stations collecting data on suspended particulates, sulfur dioxide, oxides of nitrogen, hydrogen sulfide, sulfation and dustfall. Meteorological data is also collected. Sampling is once per week in Bombay and once in three days in Calcutta.

These stations cost about \$1,200 each to build and about \$3,600 per year to operate. National trend stations cost about \$800 and \$1,600 respectively. According to Dave, the national stations have an 80 per cent confidence limit for 24-hour data, and the city stations have a 90 per cent confidence limit for 24-hour annual mean.

**Netherlands Network**—The Netherlands have one of the highest population densities in the world, major industrial centers, extremely variable meteorology and heavily industrialized neighbors. This means, according to T. Schneider of the National Institute of Public Health, that air pollution is also extremely variable, both in degree and in composition.

Therefore, the country has installed a national air monitoring network, consisting of 217 stations, which has been in full operation for about a year. The network is designed to provide a reliable estimate of the quantity, composition and origin of pollution, data for establishing trends, information on the effectiveness of control measures and the impact of industrial growth, information for short-term warnings and forecasting.

The network is divided into nine regional sub-networks, each with its own computerized center, which are in turn linked to a central computer in the Institute at Bilthoven. In its first phase, the network is equipped with sulfur dioxide monitors only, but plans are to expand 80 stations to measure carbon monoxide, nitrogen oxides and ozone as well. Each instrument is calibrated daily by remote signal.

The data are used to calculate iso-lines on a geographical basis, to plot trends independent of meteorology, and to forecast likely high pollution levels. So far, according to Schneider, the network has performed well in producing a map of geographical distribution, and development of the warning function "looks promising." However, to study the transport of pollutants, supplementary traverse data gathered by airplane and mobile vans has been needed.

**Latin American Monitoring**—The Pan American Health Organization in 1967 began an international air monitoring network in Latin America and the Caribbean, known as REDPANAIRE. According to a paper presented by PAHO's Frank Utrico, this network has grown to 93 stations measuring sulfur dioxide and particulates in 30 cities in 15 countries, plus 126 small stations in six cities measuring only settled dust. Thirty more stations are now being installed or are in the planning stage.

Results show so far that most of the cities in the network exceed the long-term air quality goal set by the World Health Organization for suspended particulates (40 micrograms per cubic meter as a monthly average) but fall within the WHO goal for sulfur dioxide (60 micrograms). However, the data also show pollution levels rising at 60 to 72 per cent of the stations.

The experience with REDPANAIRE could be a valuable guide for establishing an International Network of Air Pollution Sampling Stations, according to the PAHO paper. Factors contributing to its success include the selection of simple, low-cost methods and the use of a detailed Manual of Procedures. By 1980, it is hoped, the network will have 250 to 300 stations in every country and important city in the region.

**Common Market**—Throughout the nine member countries of the European Economic Community there are more than 6,000 fixed and random monitoring sites for sulfur dioxide and suspended particulates. But there are less than 100 sites for carbon monoxide, according to a paper by four experts from the Community's Commission. So far, furthermore, there's no systematic attempt to measure pollution in the Community as a whole. The networks in the individual states are not compatible with one another. Therefore the Community's Environmental Action Program, begun in 1973, has as one of its major objectives harmonizing these various national programs and instituting a degree of quality control. First steps consist of exchange of information and interlaboratory comparison programs.

Under a decision by the Community's Council of Ministers, work has begun on sulfur dioxide and suspended particulates. Over a three-year period, selected information will be provided by each country based on a few hundred sites in about 50 cities. The basic data will consist of daily mean values in five categories of urban areas covering high, average and low pollution. The data will be evaluated jointly by experts from the member states and will be in a form compatible with the WHO pilot project on air pollution measurement, with which there will be about a 20 per cent overlap. It is also planned to integrate the network into UNEP's GEMS program.

For more information on these or other papers presented at the Las Vegas Conference, contact G.S. Douglas, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

JRM



## South Korea Shows Signs of Concern for its Environment

*SEOUL, South Korea*—Foreign observers have long decried South Korea's lack of an effective program to combat pollution, particularly in the rapidly growing industrial areas of Seoul and the southern port of Pusan. But there are now signs that the country is moving ahead with an environmental program.

A special two-day seminar on water pollution this summer brought together 50 experts under the patronage of the Ministry of Health and Social Affairs. A German sanitary engineer, Brend Hillman, working under a 1972 technical cooperation agreement with West Germany, outlined the program needed to cleanse Pusan's waters. In addition to a new network of sewage treatment plant, he said, flood control is needed along the Naktong and tributary rivers to prevent raw sewage from running through highly populated areas. Cess-pools, common in Korea, allow nightsoil seepage when hit with the periodic floods during the May-September rainy season. Hillmann also warned that sewage disposal into coastal waters must be controlled to protect the fish which are a staple of the Korean diet.

The seminar also heard from Dr. Nathan C. Burbank, Jr., professor of environmental health at the University of Hawaii, who is in Korea as an advisor to the

government from the World Health Organization on water pollution control programs.

In another environmental development, Prime Minister Kim Jong-pil has formed a special Administration Improvement Committee, one of whose main functions is to help clean up South Korea's solid wastes.

The impetus is not strictly environmental, but also economic necessity. South Korea was hard hit by last year's oil price hike, and government planners are working on ways to trim the nation's energy bill and reduce dependence on imported oil. The committee has come up with an "intensive plan" and will probably recommend a resources recovery law.

Koreans salvage and recycle smaller proportions of waste products than other peoples. For example, Japan collects 44.7 per cent of its potential scrap iron, while South Korea collects only 9 per cent. Only 13 per cent of waste plastics, 4.3 per cent of rubber goods and 21.8 per cent of empty bottles are recycled.

During 1973, South Koreans collected 110,000 tons of waste paper. A ten per cent boost in that collection, according to the report, would mean a savings of \$8.2 million. Prime Minister Kim has ordered all government authorities to get behind the program and called on industrialists to become producers of new value by actively aiding the "energy reproduction movement."

ARTHUR MILLER

### Aluminum: *(continued)*

more recycling and cites the high U.S. targets set for this program. Recycling would also reduce the solid wastes problem, he comments. His report also suggests that technological advances in production can be expected.

Ruckelshaus predicts that the high energy needs for aluminum production will make Middle East countries potential sites for new production. Included among the number of Mid-East states debating new production facilities are Iran, Iraq, Kuwait, Saudi Arabia, Qatar, Abu Dhabi and Algeria. Total smelter capacities under consideration there amount to 1,400,000 metric tons annually, which would raise the combined capacities of Mid-East countries to 1.8 million tons per year, which he notes, would be a sizable part of the world total. (Total annual production in 1973 was over 13 million tons).

Greater use of aluminum in vehicles, packaging, energy transmission (electricity), beverage containers and in developing solar heating promise great future growth in the industry, with a continuing rise in demand.

In his appeal for more recycling, Ruckelshaus raises "the possibility looming on the horizon of producing aluminum in a closed loop system that prevents the generation of hazardous emissions."

Professor Merton C. Flemmings of Massachusetts Institute of Technology (MIT) focuses in his report on the problems of resources and energy. He notes the annual growth rate in aluminum production over the past ten years averaged about 8 per cent annually, therefore doubling production about every nine years. Recycling yields about 25 per cent of the aluminum available, he reports.

Flemmings says that technical advances in production could reduce energy needs of the industry by about 30 per cent, but warns that capital investment for such a program would have to be very large. Therefore, he continues, he foresees in the next four to five years a "maximum feasible" reduction of about 10 per cent.

Dr. Ivar Nestaas of Norway will present a paper dealing with environmental impact and occupational health. He looks at the air pollution impact of fluorine and discusses problems of cleaning systems now available. He also studied water pollution, solid waste disposal and working conditions. The costs of operating air pollution control equipment runs from 1 to 5 per cent of the price of the produced aluminum, Dr. Nestaas notes. He adds that recovery of the fluorine compounds would reduce the cost of gas cleaning considerably.

He calls for monitoring of the impact on vegetable and animal life of fluorides in the areas where aluminum is produced. Dr. Nestaas' report lists the fluoride emission standards in the United States, West Germany, Japan and Norway.

WILLIAM MAHONEY



## Briefs . . .

### Mexico Will Launch Rockets In Weather Control Project

Rockets will be used in an attempt to improve the weather in a priority project of Mexico's Outer Space Commission. Launch date for the first weather rocket is next month, some 15 years after Mexican rocket developers had their first blast off.

Named "Tlaloc" for the ancient Mexican rain god, the 1.1 meter rocket will carry a chemical load to seed clouds and create rain. It will also be used to disintegrate hail when atmospheric ice threatens to damage or destroy crops. Most of the northern half of Mexico receives less than 20 inches of rain annually.

In previous atmospheric exploration, Mexican rockets have used solid fuel to attain an altitude above 35 kilometers. Rain stimulation is the prime goal of the commission, which is headquartered in Mexico City.

### Philippines Officials Want Nuclear Fuel Reprocessing Plant

Philippine officials are hopeful that their country may be named as an Asian center for recycling used atomic fuels. At present there are no facilities for recycling used fuels for reactors in the region. The main sources of such recycling are Britain, the U.S. and France. With the development of nuclear power plants—now greatly speeded up because of the oil crisis—Asia will offer a good market for a recycling operation. As a signatory to the nuclear non-proliferation pact, the Philippines believes it may be acceptable to other Asian nations as a location for such a facility. Currently Japan and Taiwan are the leading nuclear power countries but reactors are programmed for Indonesia, the Philippines, Pakistan and South Korea. The Philippine Atomic Energy Commission (PAEC) has put the

proposal before the Philippine Government and the idea is expected to be discussed at the next ministerial meeting of the Association of Southeast Asian Nations (ASEAN). The facility would reprocess uranium.

In a related development, the Philippines is pushing a uranium ore prospecting effort following discovery of promising indications in northwest Luzon, Cebu, Samar, Leyete and parts of Negros islands. A special project to extract a deep-lying ore found at a copper and molybdenum mine three years ago is now underway. By law, all uranium belongs to the government and mining will be under government auspices.

### Smoke Control Claimed Good At China's Shenyang Factories

A recent report from Shenyang (formerly Mukden) in northeast China says that black smoke has been eliminated from 70% of the city's factories. The heavily-industrialized city has a Research Institute of Industrial Hygiene with six specialized research centers, laboratories and even a sanitorium. No building project can be started without approval from the Institute nor can new technology be introduced. Teams from the Institute regularly check factory worker health, pollution controls, radiation hazards, dust levels, ventilation, high temperatures and even noise levels. Shenyang has more than 1,000 full-time staff members keeping surveillance on hygiene and pollution, according to the report.

Every factory with more than 1,000 employees is required to have a full-time pollution staff man. Any factory or mine with more than 5,000 workers must have a hygiene department of its own which, among other duties, regularly give workers medical checkups. The report claims that occupational diseases at the Shenyang No. 1 Grinding Wheels Plant have been "virtually wiped out." An investigation of the plant's

conditions led to special funds being allocated to automate much of the production, thus sparing workers severe lung and other disease exposure. The Institute reports that no instance of silicosis has been detected among workers of the Shenyang Glass Factory since 1955.

### British Will Test Children Exposed to High Lead Levels

An experiment to test whether children exposed to high doses of lead in their environment show any brain damage is to be carried out by the Department of Psychiatry, University of Birmingham, England. According to the environmental unit of Birmingham's City Council, there are very high levels of lead in the city's streets and houses, particularly near one large road junction.

Two groups of schoolchildren, one with high lead levels and one with low, will be given tests related to personality, I.Q., and motor performance, together with EEG's and full psychiatric and neurological screening. Lead will be measured from extracted teeth, and the group with "high" lead level will still come within limits presently considered safe.

### British Plan To Construct Autonomous House Prototype

Enough research has been completed in Cambridge University's "Autonomous House Project" for an experimental prototype to be built and occupied.

Begun in 1971 by Alexander Pike of Cambridge's Department of Architecture, the project is designed to show that an autonomous house, independent of all centralized services for electricity, gas, water and sewage, would not only reduce consumption of fossil fuel, but would also change the present pattern of urban growth which depends so heavily on such service networks and is therefore vulner-



able to economic and social disorder.

The autonomous house will be heated by collection and storage of solar energy; electricity will be generated by wind power, with any surplus used for water heating; rainwater will be collected and purified; cooking will depend on methane produced in a digester from both human and kitchen wastes; the digester sludge will be used as garden fertilizer. More efficient insulation, ventilation and domestic equipment will reduce energy demand.

The project aims at attaining present-day standards of comfort and amenity. Initial construction costs will be high, but should be offset in the long run by lower operating costs and land costs made cheaper by distance from the centralized services. Future mass production would also bring down construction costs, and some of the innovations should be applicable to existing houses.

#### Shark Liver Extract Seen as Substitute for Ambergris

Now that Japan, Russia and the U.S. have agreed to protect the sperm whale from extinction, a shortage of ambergris, a vital substance used as a fixative in perfumes, has developed. To meet this shortfall, Japanese businessmen have discovered that the livers of sharks contain a good substitute. They are pouring money into the shark business in the Philippines.

Sharks (many of which are small, contrary to popular notions of huge man-eaters) can be used for many things: shark oil, medicine, hide, and the delicious fins which make the exotic Chinese dish, shark's fin soup. Shark meat is sold in Japan and is considered a delicacy in some parts of the Philippines. Sharks have 150 to 200 teeth which can be sold to tourists for additional income. A shark fisherman using sturdy trawl lines from small off-shore boats can land 30 to 35 sharks a day. A drum of shark oil can fetch about \$200—

but it takes 2,200 pounds of shark to make a barrel of oil.

Because of the Japanese interest, shark fishing is now booming in the Philippines, particularly between Mindando in the south and Luzon island in the north, through the Visayan waters where sharks are now found in abundance. This development may help save the sperm whale, but no one yet knows what it may do to the shark population.

#### Japan Will Ask U.S. to Clean Up Oil Used by the Military

Japan intends to ask the United States to halt use of high-sulphur oils at its military bases. Environment Agency Director General Ozawa told the Lower House of the Diet (Parliament) recently that measurements of atmosphere near major bases at Okinawa, Yokosuka and other U.S. installations showed pollutants eight times the discharge standard stipulated in the Atmospheric Pollution Prevention Law. The agency is undertaking a complete investigation, following which the Americans will be asked to clean up their fuels. Japan prefers low sulphur oil but U.S. ships and aircraft continue to utilize high sulphur fuels. (Two primary Asian sources of low sulphur crude are Indonesia and China.)

#### Report Will Urge Action On Hong Kong Pollution Problems

Environmental Resources Co., London-based consultants, hand in their first report next month to the Government of Hong Kong. The report, resulting from eight months research, is expected to call for wide-ranging legislation. Our recommendation may be establishment of a comprehensive atmospheric monitoring system tied continuously into the Royal Observatory (weather bureau) data processing center. At 20 sites around

the colony electric air pollutant and climatological instruments will monitor Hong Kong's air. This will replace a simple system of 30 air pollution monitors now manned by the Labor Department.

New evidence of the danger of air pollution came when a program of rain water testing—done by students in a joint educational program with the Labor Department—revealed high levels of acidity in collecting samples. Acidity (pH) factors were 97% below the "pure air standard" of 5.7. In 18% of samples, acidity was under 4.5 pH. The Hong Kong Conservancy Association, a private group, and the Royal Observatory aided in the testing. Other tests are being conducted to identify precise pollutants in various areas.

Meanwhile, the colony's year-old Marine Pollution Unit has undertaken an extensive study of phytoplankton in sea waters. These surface-breeding plants indicate degrees of pollution and a study of species can pinpoint precise sources of water pollutants. A second marine project involves study of sea bottom life. Local scuba divers are aiding the study under the direction of Dr. G.B. Thompson, a British expert brought in to head the Marine Pollution Unit.

#### Japanese Companies Seek Control Equipment Exports

Thanks to slowdowns in domestic manufacturing activity, Japanese companies are now launching a drive to export their pollution control systems abroad. One leader is Mitsubishi Heavy Industries which has a contract for waste water disposal for Brazil steel mills. The firm has about 20% of the Japanese market which in the past has amounted to around \$2.2 billion on pollution control devices and systems each year. This year, however, manufacturers expect only \$166 million in Japanese sales. Therefore, they are looking overseas. Latin America is seen as one possible large market



for Japanese firms. In Asia, Singapore and South Korea are the likely buyers. Mitsubishi now hopes to sell up to a fifth of its pollution equipment overseas. The bigger competitors are West German and Swedish firms which have long been in the Asian and Latin American markets.

### Mexican Study Looks at The City as a Work of Art

An innovative study on "The City As A Work of Art" has been conducted at one of Mexico City's oldest institutions to develop "concrete proposition for the solution of new problems that confront the contemporary city." Director Antonio Ramirez Andrade of the National School for Plastic Arts, formerly known as the San Carlos Academy, said the course was a means for the 190-year-old school to keep ahead of a society in transition.

International specialists probed the value of urban sculpture, urban transformation, the social functions of urban art and general problems of the city with the purpose of inspiring positive action to make Mexico City more habitable for its nine million citizens.

### Diesel Fuel Blamed for Haiti's High Sulfur Dioxide Levels

Diesel fuel with a high sulfur content is being blamed for the irritating air pollution that has suddenly appeared over Port-au-Prince, Haiti. With no industry capable of producing sulfur dioxide in any quantity, Haitians suspect they are victims of dumping of low grade Venezuelan diesel fuel because they have no environmental protection laws whatever and lack the sophisticated personnel to deal with such dumping. There has been a marked increase in respiratory ailments in Port-au-Prince, "from an unknown source," according to an official spokesman.

### World Bank Loan Will Aid Pakistan's Lahore Water Plan

The World Bank has offered a \$20 million loan to cover the foreign exchange component of the \$40 million second phase of Pakistan's Lahore water development program. The Lahore Development Authority has agreed to make certain changes in its program for streamlining and to enable it to gauge achievements.

Under the second phase, the Authority will install 59 new tube-wells for drinking water and construct 40 miles of watermain grid; 58,000 new water connections will be made to serve one million of Lahore's three million population. Main trunk sewers will be laid over an area of 21 square miles to serve about 900,000 people. The Budha Ravi storm water channel will be remodelled, and branch sewers will be laid over an area of 113 square miles.

### Technology Assessment Conference

An international conference on Technology Assessment will be held in Monaco October 26-30 to promote exchange of information and views among scientists, government officials and industrialists with special interests in ocean technology and marine ecology. The conference is sponsored jointly by EUROCEAN (Association European Oceanic), representing 30 leading industrial groups in Europe, and the International Society for Technology Assessment. Honorary chairman will be Prince Rainier III.

### Irradiation Preserves Fruit

Experiments using irradiation to conserve fruit and delay rotting have been successfully performed at Mexico City's National Autonomous University. Dr. Luis Cabrera, researcher in chemistry, has urged that the system, using gamma rays,

X-rays or electrons, be made commercially available.

Dr. Cabrera said in each of his experiments using the rays or electrons, natural rotting processes have been retarded. If irradiation equipment could be used at picking sites, fruits and vegetables would remain fresh longer than is now possible.

Tropical fruits tested by Dr. Cabrera included bananas, pineapples, strawberries, cantaloupes, apples, oranges, papayas and mangoes.

### Mexico Lists Endangered Animals

Once-plentiful species including the black bear, honey bear, wolf, jaguar and puma have been placed on the "endangered" list in Mexico by the School of Veterinary Medicine at the National University of Mexico.

A statement by the school blamed "man-made changes in the environment" for the threat of extinction to these animals. Changes include the cutting of forests, hydroelectric dams, construction of roads and airports.

The government has not yet banned the hunting of the species.

### Indonesian Cement Plant Will Install Dust Collector

A new \$80 million cement plant being built in Java will be the first Indonesian cement manufacturer to have an international standard dust collector installed. The plant is a joint venture of Mitsui and Onoda Cement of Japan and PT Gunung Ngadeg Jaya of Indonesia. The dust collector will be important because the plant site, near Cilacap in central Java, includes a ten-hectare housing compound for workers and their families. The plant will initially produce 600,000 tons per year, with production to be doubled by 1980.





# World Environment Report

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## Trade Unions Force Relocation of Ethyl Operation in Greece

**ATHENS**—The Greek Ministry of Industry has ordered one of the country's biggest chemical companies to remove its installations from the port of Salonica because of pollution.

The decision followed strong pressure by trade unions who blame Ethyl Hellas Co. for polluting the atmosphere with lead emissions and endangering public health. The company was established in Greece in 1965 and produces antiknock compounds.

The issue arose in August when measurements taken by the Salonica Port Authority showed lead levels in the atmosphere almost four times those considered normal. The authorities therefore banned work on the dock where the company's facilities are located. But the unions extended the work stoppage to the whole port and demanded removal of the industry from the harbor area.

For its part, Ethyl claimed there was no danger to the workers, but stopped operations nevertheless.

Guarantees given by the Ministry that further measures had brought the lead to acceptable levels did not persuade the worker to return. Therefore, the Ministry ordered removal of the installations from the harbor and their re-establishment in an uninhabited area 100 km away. Ethyl employs 250 workers and brings in \$40 million annually from its exports.

Ethyl agreed to the Ministry's order and estimates the removal will be complete in nine months.

## Air Pollution Is a Serious Threat To Electric Transmission Lines

**GENEVA**—A report of the United Nations Economic Commission for Europe (ECE) says that air pollution has become a serious problem for electric power authorities.

Thus, the ECE points out, although environmentalists are disturbed about the siting and size of power plants, the stringing of transmission lines across the countryside and pollution of the air and water from power plant operations, there is another side to the coin. Inquiries in 20 ECE countries showed that air

pollution has become an important factor in power breakdowns. The report was prepared by a Mr. Dancila of the Rumanian Institute for Energy Research and Modernization for the Group of Experts on the Relationship between Electricity and the Environment of the ECE Committee on Electric Power.

According to the report, trouble arises when insulators and overhead lines become coated with airborne chemical pollutants. Then, in certain weather conditions, a flashover, or electric arc, occurs, the power supply is interrupted and, enough heat is generated, an insulator can be broken.

The report found that both industrial pollution and natural contamination are to blame. Sulphuric and nitric acids and oxides, phosphates, chlorine, ash from thermal power stations using low-grade coal are among the main sources of insulator and power line contamination, while sea salt, rock salt strewn on roads, chemical fertilizers, road dust and dust from quarries and mines have all been identified among the more "natural" culprits.

Foggy weather is the worst for flashovers, according to the ECE report, because humidity makes the coating on the insulators and power lines more conductive. Heavy, penetrating dew has the same effect, but not heavy rain, which washes only the outer surface of the coating—unless it comes after a long dry spell. Icing, thawing and winds from the sea are regarded in some countries as contributory causes of flashovers.

Twelve of the countries contributing to the study measure the intensity of pollution on electrical installations, and five of them select sites for transformer stations and power lines in such a way as to reduce the problem whenever possible. Special insulators and reinforced insulation for overhead lines have been developed for use in heavily polluted atmospheres, according to the study, but the use of underground

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cables, indoor substations or metal-clad equipment solely as protection against pollution are considered extreme and uneconomical measures.

But a number of countries have rules for selecting insulation in polluted areas, and in almost all cases installations are cleaned regularly.

The ECE report points out "because the problem is most acute in areas of high industrial development, the situation arises where it is the consumers themselves who are mainly responsible for the pollution of insulation."

The report calls for continued and intensified research on better external electrical insulation and notes the "encouraging results" obtained by the International Electro-Technical Commission and technical bodies of the EEC and the Council for Mutual Economic Assistance. (Comecon)

WILLIAM MAHONEY

## Experts Draft Criteria For Toxic Chemical Register

**NAIROBI**—A meeting of experts here last month drew up in outline form the criteria to be used to decide which chemicals should be included in the International Register of Potentially Toxic Chemicals (IRPTC), a program activity center of the UN Environment Programme (UNEP). Establishment of the IRPTC as a UNEP center follows a decision taken at the agency's Third Governing Council meeting here earlier this year.

Program activity centers are decentralized and not sited at UNEP's Nairobi Headquarters. The IRPTC will probably be located near other scientific groups working in related fields and with easy access to computer facilities. The center will be built around a register of potentially toxic chemicals arranged for computer handling and containing both technical data and sources of further information.

Information will be available at two levels—for a relatively small number of chemicals whose toxic properties are well known and for which many countries have detailed regulations, a considerable amount of information will be stored. Examples of such chemicals are mercury, cadmium and the PCB's. For a larger list of less well-known substances, less extensive information will be stored.

The criteria drawn up by the 13 experts from 11 countries will be refined as experience is gained with the register. It is expected the register will be of special importance for developing countries where new industries are being established.

An important task of the IRPTC will be to establish an Emergency File containing information on what to do in case of an accident involving toxic chemicals. The experience of organizations that have dealt with such accidents in the past will thus be immediately available. Where a new factory is built which uses a potentially

toxic material, the Emergency File information could be kept constantly at hand.

The IRPTC may eventually perform other functions as well, including guidelines for legislation, and developing an "early warning" system for potential future hazards. But its main function will continue to be to provide what has been called an "international clearing house for information on potentially toxic chemicals."

PAUL TOULMIN-ROTHE

## Amazon Nations Agree to Establish International Park and Committee

**LETICIA, Columbia**—Six south American nations with Amazon territories agreed last month to establish complementary legislation for an Amazon multinational park. The agreement was reached at a meeting in this city, which is Colombia's principal Amazon port.

Sponsored by the Colombian Ministry of Agriculture, the conference was attended by representatives of Brazil, Ecuador, Peru, Bolivia and Venezuela in the first attempt to set a continental policy for the world's largest remaining natural park.

The delegates also agreed to underwrite an intergovernmental committee for ecological studies in the Amazon basin. The committee's permanent headquarters will be in Bogota under the auspices of the Colombian wildlife service, INDERENA, which is building an \$806,000 ecological station here. The six countries will present individual projects for financing the committee by December 1, possibly including the issuance of special Amazon postal stamps.

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## Special Report: Global Monitoring Program Shows Some Action

**NAIROBI**—The Global Environmental Monitoring System (GEMS) which is one of two major components of the UN Environment Programme's "Earthwatch" project, is beginning to swing into action. Unlike the International Referral System (IRS) (WER, Sept. 1), the other component of Earthwatch, GEMS is not a single unified project but rather a constellation of discrete projects, some of which may be worldwide or regional in scope, while others are restricted to smaller areas.

The GEMS program, which is directed by Dr. Francesco Sella at UNEP headquarters here, has projects falling into four broad categories. These are monitoring natural resources, monitoring pollutants, research and development and a series of expert meetings on appropriate subjects.

The monitoring projects may be global, regional or local in application. An example of regional resource monitoring (which may eventually become global) is the assessment of soil degradation hazards in the Middle East and Africa north of the Equator being carried out by the UN's Food and Agriculture Organization (FAO) and the UN Education, Scientific and Cultural Organization (UNESCO). This project is already underway and is scheduled to be complete by early 1977 as part of the input to the 1977 UN Desertification Conference.

Another such activity is the pilot forest cover monitoring project being undertaken by FAO in three West African countries. This project uses remote sensing devices mounted in aircraft and satellites; the results and experience gained will be used to determine whether similar programs, and what kind, are required in other tropical forested regions, such as South America, Southeast Asia or New Guinea.

Information gathered in these resource projects is of greatest value to national planners who are concerned with the exploitation and proper conservation of forest resources.

Some of the projects now falling under the GEMS aegis have been in progress for some time. An example is the measurement of atmospheric pollution levels in remote areas like mountain tops and oceanic islands that the World Meteorological Organization (WMO) has been carrying on for two years. The purpose of this study is to examine long-term trends in the composition of the global atmosphere, as opposed to the short-term fluctuations observed near urban centers.

The work is concentrating on two aspects: amount of carbon dioxide in the air, and the turbidity of the

air. This latter parameter determines to a large extent the amount of solar radiation falling on the surface of the earth and therefore has the greatest importance in studying long-term climatic change.

Four of five baseline stations are already in operation or near startup. Studies are underway on the feasibility of establishing a baseline station in Africa, probably on a mountain top in the eastern part of the continent.

Monitoring of ocean pollution is another area of high priority for GEMS. Some activity is already in progress by WMO and the Intergovernmental Oceanographic Commission (IOC), and the Integrated Global Ocean Station System (IGOSS) is undertaking a project to monitor petroleum hydrocarbons within the great shipping lanes. Later projects planned by GEMS will go into the open oceans beyond the shipping lanes and will encompass pollutants other than hydrocarbons.

A number of other projects are either underway or at the planning stage. They include monitoring air pollution in urban areas (initiated by the World Health Organization even before the Stockholm Environment Conference), monitoring water pollution from the point of view of health (WHO, WMO, UNESCO), and monitoring food contamination. The first steps have even been taken toward a comprehensive program for monitoring pollutants in the Indian Ocean. For this project, a survey has been commissioned by Indian Ocean governments in all parts of the region.

Two more GEMS activities deserve mention. First, in the area of research and development, an international environmental Monitoring and Assessment Research Center has been established at Chelsea College in London with a total of \$1 million provided by UNEP and the Rockefeller Foundation.

The center's program, planned to run until 1977, will concentrate on establishing environmental parameters, deciding which of these to monitor and developing methods of measurement. The center will feed its data to GEMS. The center's program is part of a larger one devised by the Scientific Committee on Problems of the Environment (SCOPE).

Secondly, a series of meetings of expert groups to advise on various aspects of GEMS is being arranged. The first two of these (one on oceans and the other on problems of monitoring land and water use) are scheduled for the near future, and further meetings will take place during 1976.

PAUL TOULMIN-ROTHE



## Pakistan Drafts National Policy To Meet Soaring Housing Needs

*ISLAMABAD, Pakistan*—The government of Pakistan has drafted a national housing policy aimed at providing shelter to a maximum number of people while keeping in mind the growing needs for environmental protection and pollution control.

Pakistan's rapid population growth and the migration of people from rural to urban areas have created a severe housing shortage, which necessitated a national policy (*WER*, July 21, p. 4).

The new policy aims at speeding up projects involving land development for residential purposes, small plots for individuals, loan availability for housing construction and building the infrastructure necessary for better living conditions, such as extension of piped drinking water systems and sewerage facilities and improved housing standards for rural areas.

Pakistan now has 70 million people, and the population is growing at more than three per cent per year. There is today a deficit of 2 million houses in the nation. In urban areas, the population is growing at six per cent per year, due to in-migration from rural areas.

To meet the urban needs, the government estimates, 150,000 dwelling units must be built each year. But only 35,000 units per year are now being constructed, leaving a deficit of 115,000 per year. In rural areas, the problem is one of substandard housing—about two million homes should be improved in some fashion. One estimate is that only five per cent of rural dwellers have proper drinking water supplies and sewerage, while up to 35 per cent of urban dwellers have these services.

The annual development plan for 1974-75 allocated \$72.8 million for planning and housing, a 544 per cent increase over the 1971-72 allocation of \$13.8 million. The actual 1974-75 expenditure through March of this year has been \$48.34 million, or 66 per cent of the allocation.

M. AFTAB

## Public Opposition Slows Down West German Nuclear Power Program

*BONN*—Public opposition is preventing West Germany from meeting its targets in one of the most ambitious nuclear energy programs in Europe.

Under World War II surrender terms, the Germans were severely restricted in the work they could carry out in nuclear research and the application of nuclear energy. These restrictions were eased in 1955, but by that time West Germany was far behind the rest of the industrialized world in nuclear technology. To catch up, the country's two leading electric equipment manufacturers, AEG and Siemens, entered into agreements with General Electric and Westinghouse, respectively,

to build nuclear power stations under the U.S. firms' licenses.

The West Germans have rapidly made up for lost time. The years from 1955 to 1965 were spent learning the U.S. technology and building several small prototype plants and three commercial ones. The largest, a 250-MW boiling water reactor, was completed by AEG in 1966. Within the next few years, the West Germans are expected to assume the European nuclear lead, surpassing the British, whose first commercial reactor was commissioned in 1956.

The West German government's long term nuclear energy program calls for 20,000 MW by 1980 (up from today's 3,400 MW) and from 45,000 to 50,000 MW by 1985. This would account for about 15 per cent of total energy output, compared with 1.4 per cent today, and 45 per cent of all generated electricity.

West Germany today has 11 operating nuclear plants, with another 12 under construction. If the 1985 goal is to be met, another 15 plants at 1,200 MW each will have to be built.

But, while the government has embarked on this ambitious program, present approval procedures may prevent it from meeting its targets. Local governments, citizens groups, even individuals, can hold up construction on environmental or health grounds.

BASF, the chemical company, has been waiting since 1969 for approval to build a 350-MW plant in Baden-Wurttemberg to supply its own power needs. State officials say approval has not been granted because the proposed site lies too close to the city of Ludwigshaven. Company officials threaten to transfer a good part of the Ludwigshaven operation elsewhere.

At *Whyl*, on the Rhine, plans for a 1,350-MW nuclear plant have been held up since 1973. Despite local government approval, neighboring vintners have managed to delay construction on the grounds that a nuclear plant could have an adverse effect on their grapes. The issue is now before the courts.

At the resort town of *Breisig* in the Ahr Valley, the mayor has all but vetoed a 1,200-MW plant on esthetic grounds. Villagers maintain that the nuclear plant's cooling tower would ruin the skyline and envelop the area in constant fog.

To allay public fears, both the federal government and industry have undertaken a public relations campaign to correct what they regard as misconceptions about nuclear power and to stress the need for nuclear plants in Germany.

In its reactor safety program, the federal government emphasizes that it is continuously "updating regulations and guidelines" to keep abreast of constantly improving safety technology. Special attention is given to safeguarding against such risks as sabotage, air-crashes and earthquakes.

The Association of Electric Producing Industries recently ran full page ads in newspapers and magazines throughout West Germany in an attempt to calm public

(Continued next page)



## The Baltic Sea: Finland Is Only Nation To Ratify Convention To Date

**HELSINKI**—Over a year ago representatives of the seven Baltic Sea states—Finland, Sweden, the Soviet Union, the two Germanys, Denmark and Poland—met here and signed a comprehensive convention on protecting the marine environment of their common body of water. But so far, only Finland has ratified the document.

The Baltic is a unique formation, the biggest brackish water basin in the world. It is shallow (average depth of 55 metres), and its salinity decreases from the Danish sounds to the gulfs and from the bottom to the surface of the water. At the surface in the middle of the Baltic, the salinity is about 1/5 that of the oceans. Baltic water is also cold, meaning that biological processes are slow.

The Baltic supports a special type of aquatic life. The number of species is small—some true ocean animals live in marginal conditions under physiological stress, which accounts for their small size (e.g., the Baltic herring and the blue mussel), and several fresh water species also live in the strange environment. However, the populations of some of these species can be large.

The organisms are very sensitive to even small changes in the quality of water. A small increase in nutrients leads to eutrophication, and the ability of the waters to degrade organic matter is restricted. The stratification and stagnation of the deep waters causes wastes to accumulate at the bottom, and low oxygen content is common in the deep waters. The situation is improved periodically when oxygen-rich sea water surges through the Danish sounds.

Surrounding this delicate ecological system are countries with about 150 million inhabitants. The Baltic States are highly industrialized and carry on intensive agriculture as well. The Baltic is also heavily used for navigation. This means that the sea receives a heavy load of pollution. So far, this pollution is relatively localized, but some bio-accumulative substances, such as DDT, have become a real danger to the aquatic life throughout the entire Baltic.

In 1973, the government of Finland submitted a memorandum to the other Baltic states setting forth the need for controlling Baltic pollution and proposing an international convention. This led to initial meetings of government experts in 1973, the drafting of a convention and a final plenipotentiary Conference on the Protection of the Marine Environment of the Baltic Sea Area in Helsinki in March, 1974.

The convention signed at this conference consists of 29 articles and six annexes. Its scope includes pollution caused by shipping and by land-based sources, both waterborne and airborne. The Convention will totally prohibit dumping of solid wastes except for harmless dredge spoils. It provides for cooperation in accidents which may cause pollution. The provisions for pollution related to shipping are mostly derived from the 1973

International Convention on the Prevention of Pollution from Ships, but the parties agreed that these provisions must be stricter for the Baltic than for the open seas.

Also included are articles covering recreational boating, exploration and exploitation of the sea bed, scientific and technological cooperation, the responsibilities of the contracting parties, and the settlement of disputes. A permanent Baltic Sea Commission will be established, with its secretariat in Helsinki.

The annexes detail lists of substances whose introduction into the Baltic the governments will strictly limit, and substances for which special permits will be required. Goals for the quality of municipal and industrial waste waters are set forth, as are detailed regulations on disposal of wastes from ships and the transport of harmful substances. Provision is made for new regulations and changes as required in the future by the Commission.

The Baltic Convention will, after it is ratified by the other states, be the first comprehensive convention on the marine environment in the world. ANU PARNANEN

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### Nuclear Plan (continued from p.4)

fears. The advertisements maintained that public apprehension over nuclear power stems from a lack of understanding of safety measures and how nuclear plants function.

Another problem for the West German nuclear industry is the supply of fuel. Until the late 1960's, the U.S. was the only major supplier of enriched uranium. Then the Soviet Union began to offer competing enrichment facilities, but it wasn't until 1971 that Europe began producing from two competing enrichment processes—the gas centrifuge used by the German-British-Dutch URENCO group, and a modified gas diffusion system used by the French company Eurodif.

According to a study by the Dresdner Bank, enrichment will account for about a third of the total nuclear fuel bill, which in turn is likely to run as much as 12 per cent of the total expenditure on the West Germany nuclear power program—and \$11 billion out of \$90 billion.

The West German government concedes that because of public opposition, its 1980 and 1985 nuclear goals may not be met. Government officials claim this delay will have serious consequences for the nation's energy supply. Apparently, however, the government does not intend to compromise on the question of safety to speed up construction.

JOHN BRADLEY



## Briefs . . .

### French Authorities Move To Close Polluting Factory

The Prefect of the Eure Department west of Paris has issued a decree calling for the closing of a chemical plant at Autheuil near Evreux for its failure to comply with anti-pollution regulations.

The decree was transmitted to the Ministry for the Quality of Life on August 22. The Ministry must now, by law, approve or reject the decree after consultation with a special committee.

The firm, Protavic, employs about 20 persons and produces mainly solvents. Residents and officials of communities along the Eure River have been protesting for many months that the river is contaminated and that the pollution is causing offensive odors. The Eure Prefect last May ordered the firm to take corrective action, but such steps have not been taken by Protavic, according to the Prefect's office.

### Danes Propose to Protect Historic Districts

The Danish government proposes to extend to whole neighborhoods the existing law that protects old buildings of historical or architectural interest.

According to Environment Minister Helge Nielsen, his ministry is circulating a draft bill for comment that would give authorities the right to protect and preserve worthwhile old neighborhoods. Nielsen evidently has in mind the fate of such places as the Odense home of Hans Christian Anderson. The writer's childhood cottage has been preserved, but is surrounded by inappropriate modern buildings. The local environment group protested that the century-old houses should have been renovated instead of torn down.

### Non-Cyanide Solution Introduced For Silver Plating Industry

What are claimed to be the first cyanide-free silver electroplating solutions were announced last week by Technic Inc., a Providence, R.I., manufacturer of metal plating supplies.

Silver is the last of the precious metals for which cyanide-free plating solutions have been developed, according to A.M. Weisberg, Technic's president. Cyanide wastes have been a major water pollution problem wherever plating industries have concentrated.

The new solutions are derivative salts of succinic acid, and, while they are 20 per cent more expensive at the outset than the cyanide solutions, they should prove more economical in operation, according to Weisberg, because silver is easily recovered from the rinse solutions and there is no need for cyanide waste treatment.

Technic hopes to market the solutions in Europe within two months through its licensee—Imasa of Slough, Bucks, England. Weisberg expects interest to be high in those areas along the Rhine where cyanide wastes are a particular problem.

### Cement Plant Pollution Dispute Unresolved in Brazil

The Mayor of Contagem, a suburb of Belo Horizonte, 200 miles north of Rio de Janeiro, has been unsuccessful in an attempt to stop air pollution from a big cement plant. The Itau Cement Company plant has been operating for 34 years and now releases a daily average of 108 tons of cement dust into the air over Cotagem which has a population of 200,000.

Yielding to constant protests from residents, and mindful of the new environmental awareness in Brazil, Mayor Newton Cardoso began issuing warnings to the company to install pollution control equipment. For eight months the company ignored the warnings and in August

the mayor issued an ultimatum giving Itau one week to present plans for cleaning up its emission or face shutdown. To back up his threat, the mayor requested support from the State governor, and 120 state troopers began a vigil in front of the Itau gates.

Contagem's residents began planning celebrations for the expected clear day, but their hopes were shattered when a presidential decree from Brasilia two days before the deadline stated that only the president has the right to close down a factory for sanitary or environmental reasons. The police left, and the emissions continue.

There was no official explanation of the decree, but it is hoped the federal government will now bring pressure on Itau to clean up. But the incident reinforces the views of those who decry Brazil's lack of national environmental policy and who believe the government is still reluctant to act against a company that is contributing to the country's GNP.

### The Air Is Cleaner Over Moscow

Pollution levels in the air basin over Moscow, Leningrad, Yerevan and Kaunas have been reduced significantly according to Soviet press reports. Smoke levels have been reduced by 67 per cent, and sulfur dioxide by 33 per cent.

The cleanup results from the USSR's environment protection program in which plants in big cities are moved out of residential areas and new factories are equipped with control devices. In Moscow, according to the reports, two out of three factories identified as pollution sources now have control equipment. Also in Moscow, 1,600 motor vehicles have been converted to use propane as a fuel, and plans are to convert another 35,000 vehicles.

Environmental protection expenditures in the Soviet Union are budgeted at more than 1,800 million rubles (nearly \$2 billion at the official rate of exchange) for 1975, according to these reports.



### UNDP Helps Colombo Prepare Its Master Development Plan

The UN Development Program (UNDP) has allocated \$1.5 million to finance the major part of a master plan for the metropolitan area of Colombo. The Sri Lanka government is contributing the remaining \$200,000. The Plan will involve an infra-structure for social and economic planning to guide the growth of Colombo. It will assess the development potential and suggest solutions to the problems of housing, employment, traffic and unplanned settlement.

Most of the UNDP commitment has been subcontracted to Polytechna-Terplan, a Czechoslovak consortium in association with the Economic Intelligence Unit of the U.K. and Techno-Export of the Soviet Union.

### Public Pressure Mounts To Clean Up Bogota River

The City of Bogota has contracted for 12 international studies over the last 50 years on the pollution of its principal waterway, the Bogota River. But today the river is still counted among the world's most contaminated.

A virtual open sewer crossing the misty Bogota savanna, the river is not only a health threat to the capital's 3.5 million people, but it is also beginning to poison the Magdalena River, Colombia's most important waterway, to which it is a tributary. All fish life in the Bogota was killed off long ago.

The river already receives about 2,000 gallons of sewage per second, and this will double when a new sewage plant is completed at Chingaza. By the end of the century, with 20 million expected to be living in and around Bogota, the sewage flow will reach 16,000 gallons per second if nothing is done in the meantime to stop it.

Public pressure to take action on the problem is mounting. The Bogota

Sewage Works has a \$20 million loan from the International Bank for Reconstruction and Development for a \$40 million river regulation project scheduled for completion in 1979. But this is primarily a flood-control measure and will do little to alter the pollution problem. The sewage works does plan to construct a plant to purify the river's waters southwest of Bogota at Tocaima—but not until 1995.

### British Foundation Funds Paper Deinking Research

Britain's Wolfson Foundation has granted \$39,000 to the University of Surrey for research into the removal of printing ink from waste paper. Britain imports over \$2 billion worth of materials related to paper making each year. Of the six million tons of waste paper generated yearly, only two million are recycled. Because of the difficulty of deinking paper, printed paper can often only be recycled into packaging materials.

The research program will have two aims—to study the mechanism through which ink becomes bound to paper, and to develop new inks that can be removed more easily. The research team will be led by chemists and will have consultants with experience in chemical engineering, economics, electronics, electrical engineering and microbiology.

### Saudis Expand Road Building

Towns and villages in southern Saudi Arabia are being linked by a modern road network which, for the first time in the kingdom, involves the use of tunnels. This large network will supplement projects now underway, such as the several-hundred-kilometer Tayif-Abha-Jizan road which is almost complete. The road building program will cost nearly \$20 million, and more than \$4 million have been allocated for maintenance.

### Biological Control Promising For Indian Coconut Pest

The Tamil Nadu Agricultural University at Coimbatore in southern India is using a parasite imported from Sri Lanka to attack the coconut pest, the black headed caterpillar, which has become a serious threat to the palm in that area. According to latest reports, the parasite, *eriberus trochanteratus* (Morley), has established well on the caterpillar, and field evaluation is in progress. The parasite completes its life cycle in 13 to 15 days, thus multiplying three times as fast as the caterpillar. Sri Lanka used a similar biological control method in a successful war on the red palm weevil, which threatened to devastate the island's flourishing coconut plantations (WER, July 21, p. 4).

### British Pass Wildlife Act

A Conservation of Wild Creatures and Wild Plants bill has become law in Britain. The law covers six creatures—including the Large Blue Butterfly, the Natterjack Toad and the Greater Horseshoe Bat—and 21 plants. No one may legally kill, take or injure the protected creatures unless they are an "authorized person," such as the owner or occupier of land. The plants may not be destroyed or uprooted unless there are exceptional circumstances, such as those connected with good forestry or farming practice.

### Bogota Builds New Parks

The public works department of the city of Bogota is spending \$1.8 million this year to construct and remodel parks in the poorest sections of the Colombian capital. Among 14 parks under development is Moralba Park, the first recreational center in the southeastern slums of Bogota, with facilities for basketball and football, a children's playground and garden walks.



## Liberia Struggles to Overcome Its Housing Deficit

The Liberian government has begun to implement a \$17 million National Housing Project under which 2,050 dwelling units for low-income persons will be built over the period 1975-77. Liberia's housing needs are estimated at 11,000 new dwelling units every year.

The project included a comprehensive study of the housing needs and financing mechanisms required to meet them, as well as the construction of a complex of modern housing units including light and water systems, roads, sewerage, school, clinic and recreation hall.

The National Housing Authority has started the first phase of the program in which 182 housing units are under construction. Also included in the plan is a \$3 million agreement with a Norwegian construction firm to construct 206 units by next year.

Since its establishment in 1970, the Housing Authority has built two housing estates for low-income persons in Monrovia. According to its

director, Reynold Mensah, five to seven per cent of Liberia's gross national product should be spent on housing to meet the rate of population growth. Costs of new housing are rising rapidly, according to Mensah, because of price escalation in imported materials such as electrical and plumbing fixtures, although as much advantage as possible is being taken of local materials.

## Electric Trolleys May Replace Diesels for Athens Transport

The Greek Ministry of Transport and Communications is studying a plan for the substitution of electric trolley buses for the diesel buses now used in central Athens as a means to improve transport and reduce air pollution. The plan was proposed by a committee set up to examine communications problems in the capital and ways to prevent further damage to the city from environmental pollution.

Most of the diesel buses in the center of Athens are very old, ac-

ording to the committee, and should be replaced not by new diesels, but by trolleys "which are not dangerous for the public health." About 150 trolleys are already operating in Athens.

According to the committee's plan, 2,000 diesel buses would be removed from the Athens area.

## Australians Consider Impact Of Uranium Development

Public hearings are underway in Australia on the impact on the environment of uranium development in the Northern Territory. The Australian Atomic Energy Commission and Ranger Uranium Mines Pty. Ltd. propose developing deposits at Rum Jungle and Jabiru. The hearings began in Sydney this month and will adjourn next week for public onsite inspection.

Most of the key issues in Australian politics—multinationalism, federal control, conservation, nuclear power development—are being aired in the hearings.

## Calendar . . .

**October 6-8**—Aluminum Industry Seminar. Paris. Sponsored by the industry program of the United Nations Environment Programme (UNEP).

**October 9**—Steering Group for the International Survey of Information Required for the Assessment of Potential Effects of Chemicals on the Environment. Paris. Sponsored by OECD.

**October 13-16**—Symposium on Planning and Developing the Tourist Industry in the ECE Region. Dubrovnik. Sponsored by Economic Commission for Europe.

**October 19-23**—Limits to Growth '75. Houston. Sponsored by The Club of Rome, University of Houston and Mitchell Energy & Development Corp.

**November 3-7**—Design Criteria for Urban Water Supply Systems. Geneva. Sponsored by World Health Organization.

**November 3-7**—International Symposium on Biological Effects of Low-Level Radiation on Man and His Environment. Chicago. Sponsored by the International Atomic Energy Agency.

**November 4-7**—International Symposium on Industrial Toxicology. Lucknow, India. Sponsored by the Industrial Toxicology Research Center.

**November 10-20**—Desulphurization of Fuels and Combustion Gases. Washington. Sponsored by Economic Commission for Europe.

**December 1-5**—Seminar on Housing Tomorrow. Athens. Sponsored by the UN Economic Commission for Europe.

**December 8-11**—Symposium on Unification of Equipment for Water Purification Systems. Sofia, Bulgaria. Sponsored by the Council for Mutual Economic Assistance (Moscow).

**December 9-12**—Meeting on Methodology of Sampling and Analysis of Persistent Pollutants in Human Tissues and Fluids. Geneva. Sponsored by the World Health Organization.

**December 15-19**—Advisory Group on Radiation Protection of the Public in the Event of Radiation Accidents. Teheran. Sponsored by the International Atomic Energy Agency.

**December 15-16**—Ad Hoc Meeting of Experts for the Study of Production of Engineering Equipment for Prevention Pollution. Geneva. Sponsored by the Economic Commission for Europe.





# World Environment Report

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## September Startup Seen for UN's IRS

**NAIROBI**—The UN Environment Programme's International Referral System for Sources of Environmental Information (IRS) (*WER*, April 14, p. 1, Feb. 17, p. 3) should become operational by the end of this month, according to its Director, Richard Morse, despite remaining problems.

One encouraging sign is that more than fifty countries have indicated their intention of becoming IRS "partner nations." But many of these countries have not yet set up the needed infrastructure nor designated a "focal point," an intermediary between IRS and its suppliers and clients in a given country.

IRS can succeed only if given the basic data it needs, and must rely on its partner nations to compile complete national source lists. So far, only Britain, with a tally of 400, has provided its list. However, it is hoped others will follow suit shortly, and Morse envisages an eventual file of 30,000 to 40,000 sources from all over the world.

To help organizers of focal points, Morse has planned a series of workshops. The first—for English-speaking African and Asian nations—will be held here beginning Sept. 29. Later workshops are planned for the U.S. and Mexico City.

In the U.S., the State Department has designated the Environmental Protection Agency to be the focal point, and a formal opening is planned for October 6.

## French Are Skeptical About Enforcement of Environment Laws

**PARIS**—The new French environmental law that places responsibility for eliminating all wastes upon the producers (*WER*, Aug. 4, p. 2), which was adopted in July, has stirred little reaction among industrialists, most of whom believe it will join the list of other regulations that have only a modest enforcement record.

The new law is so sweeping that it encompasses practically any residue from consumption and production that could have a damaging effect on society. It provides for creation of a national agency charged with providing funds and loans for waste recovery and recycle.

The new law is an addition to many previous environ-

mental regulations. A 1917 law provided a basic structure for environmental protection that has been extended and amended since, most recently this summer, to give the Ministry for the Quality of Life authority to act against industries or installations injurious to public health, nature or the environment. The amendment allows fines from \$480 to \$4,800 and prison terms of two to six months; fines are \$4,800 to \$118,000 for repeaters.

There have been many other environmental laws, for example, the 1964 law for water protection. But five decrees under this law—establishing the "quality objectives" for rivers and other bodies of water—have yet to be published. The water law divided France into six water basins, making each area responsible for financing and controlling water quality through committees composed of public appointees, local groups and representatives of water consumers (industry). The primary aim was to combat pollution. The Ministry for the Quality of Life promises the missing decrees will be published soon.

The July law on elimination of wastes calls for a national agency, but it is not clear whether this will be a new group or whether an existing body will be used. For example, the Fonds Interministerial d'Action pour la Nature et l'Environnement (FIANE) already exists; it has five objectives in its 1975 program for which funds have been allotted. These include almost \$2.4 million for monitoring air and water pollution; more than \$4 million for correcting damage to nature, i.e., water purification centers, getting rid of abandoned cars; studying specific instances of water pollution; a \$12 million, five-year program to protect the Atlantic salmon; about \$8.6 million for "improving the standard of living" through acquiring and improving about 30 urban "green areas" and about 20 rural ones; and \$750,000 for an information and education campaign.

The multiplicity of environmental regulations in

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France, many of them overlapping, has thus far tended to blunt efforts to enforce industrial compliance.

France is a member of the Organization for Economic Cooperation and Development (OECD) and therefore subscribes to the "polluter pays" principle, which states that polluters must bear the cost of pollution prevention and control. This does not mean polluters must pay for the damages they inflict on others. It means that public authorities set pollution standards; such standards are met at a cost; this cost must be paid by the polluters.

The new waste elimination law clearly follows this principle, but it is not yet clear to what extent the principle can or will be enforced in France.

It is significant that President Valéry Giscard d'Estaing has directed Premier Jacques Chirac in writing to include new methods for improving the French territory, including its environment, in the government's seventh economic plan now in preparation and due to be considered in draft form at a special cabinet meeting this fall. Presumably, the plan will try to define the role of the government in helping regions and localities improve the environment.

If the government took the decision in principle to force industrial compliance with pollution control measures, then, according to most experts in the field, the existing regulations are sufficient. WILLIAM MAHONEY

## Colombia Program Would Bolster Primitive Fishing Industry

**BOGOTA**—With 2,000 miles of coastline on the Atlantic and Pacific, and a vast number of rivers, lakes and swamps, Colombia should be one of Latin America's leading fish producers. But most fishing is still done by impoverished peasants with primitive sticks and nets and there is only one important commercial fishing operation in the entire country. One hundred children die daily of malnutrition, and the undernourished masses in the interior cities can barely afford potatoes and beans, much less fish which costs more than meat.

To rectify this waste, the Colombian government has embarked on an ambitious program for both inland and marine fisheries which will be supported by a national network of refrigeration plants and trucks. Catching the fish is less of a problem than getting it to market in areas where transportation has not improved since the 15th century Inca fish runners.

A first priority of the program is to reclaim the Ciénega Grande Swamp of Santa Marta on the Atlantic coast. This one million acre swamp was a rich source of oysters and fish until a coastal highway closed its natural outlets to the sea. The swamp has undergone a drastic alteration in salinity which killed off the mangrove oysters, and overfishing also helped exhaust its supply.

With a \$15 million loan from the International Bank for Reconstruction and Development, the Colombian wildlife service, INDERENA, is undertaking a \$30 million program to revive the swamp by constructing the necessary works to regulate the water's balance both summer and winter. The agency estimates the swamp could produce 25,000 tons per year of oysters at a value over \$7 million. INDERENA also intends to help the local fishing communities to organize cooperatives and improve their fishing techniques to ensure preservation of the swamp.

This project complements a second, \$4 million,

INDERENA program to develop commercial inland fisheries. Fresh water fish today comprise 80 per cent of the national catch. The agency has established a large trout farm at Tota Lagoon near Bogota, but the government believes commercial fisheries must still be expanded greatly to increase employment and the availability of cheap protein for the urban population.

The wildlife agency also intends to spend \$2.6 million on marine fisheries. With the exception of one large shrimp factory at Cartagena on the Atlantic and some small poorly organized lobster and shrimp operations on the Pacific, Colombia's vast marine resources remain virtually untapped. The agency proposes to follow up a 1973 FAO study with the construction of a series of small plants to exploit shrimp, lobster and such white fish as snapper and mackerel. The agency is also working with the Canadian government on a study of tuna resources in the Pacific. PENNY LERNOUX

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## Britain: Economic Uncertainties Delay Cleanup Program

**LONDON**—The Control of Pollution Act 1974, Britain's attempt at a coordinated national policy to safeguard the environment, has been hamstrung since its publication by the country's worsening economic situation.

Main sections of the act deal with waste on land, water pollution, noise and air pollution. Two other sections deal with such matters as legal power to inspect and collect information, restrictions on the importation of injurious substances from abroad, and implementation of international agreements on pollution policies.

The Act replaced a great deal of piecemeal legislation and placed far-reaching responsibility for protecting the environment on local authorities and on the new regional water boards that came into effect on April 1, 1974. Consent must be obtained from these agencies by any individual, private firm or government entity for any activity that might increase noise, pollute the air or water, or in any other way damage the environment. Information relating to such applications and consents must be open to public inspection.

The provisions of the Act have already received wide public approval. But the question is how much of it can be implemented in light of the government's cut backs in public expenditure.

Early in August, the Minister of State for the Department of the Environment, Denis Howell, announced the government's decision on implementation and said "provisions which introduce only discretionary powers or which do not involve significant public expenditure will be implemented as soon as practicable."

The measures to be implemented include the whole of the sections on noise (Part III), pollution of the atmosphere (Part IV), supplementary provisions (Part V) and miscellaneous and general (Part VI). These sections will therefore be brought into force within the next few months.

Certain sections of Part I—waste on land—and Part II—pollution of water—will also be implemented. These include sections of Part I concerning powers granted to local authorities to reclaim waste and to buy waste for this purpose; in Part II they include sections concerning power of local authorities to require applications for consent to discharge industrial effluent into sewers.

Some government money will be forthcoming for implementing other sections of Part I relating to controls on waste disposal, including chemical dumping, which has received considerable publicity here since a lorry driver was killed by fumes from a chemical dumping operation. Local authorities will have enough money to carry out their new duties both to survey and license waste disposal facilities.

The axe will fall mainly on the major sections of Part II of the Act which deals with water pollution, in particular the proposed control of both industrial ef-

fluents and domestic sewage discharged into estuaries and coastal waters.

In an attempt to gain control of the total water cycle, the new water authorities were given all the responsibilities of the small municipal corporations and sewerage boards in their areas for the collection and treatment of domestic sewage. To control this source of pollution in estuaries would have required a great deal of capital construction. But now there is stiff competition for capital funds in both local and national government budgets and pollution control projects are losing out.

As long as they are taking no action on domestic sewage, the local agencies and water authorities are in no position to enforce industrial cleanup as envisaged in the Act.

Therefore, until there is enough money to make statutory control feasible, the government hopes the network of voluntary cooperation that now exists between some water authorities and some industries will increase.

This is disappointing news for those in Britain who fought for an end to piecemeal and ineffectual measures to clean up the country's estuaries and coastal waters.

ALAN MASSAM

## Major Role Seen for Nuclear Power In Britain's Future Energy Plans

**LONDON**—Signs are becoming clear that the British government is developing a national energy policy in which nuclear power will play a major role, at least until the turn of the century.

On July 31, the Secretary of State for Energy, Anthony Wedgewood-Benn, announced publication of his department's evidence on radiological safety to the Royal Commission on Environmental Pollution. The department had been asked by the commission to supply evidence on seven issues encompassing the energy picture for Britain until the year 2000.

The study says that if the current U.K. economic growth rate of 2.75 per cent per year with an associated energy demand growth of 1.8 per cent continues, energy use will double every 30 years. Although Britain is relatively well-endowed with natural resources, the study goes on, this pattern of growth would cause a shortfall of energy equivalent to 250 million tons of coal by 2000.

Nuclear fusion is the most hopeful source of power for the future, according to the report, but will not be available until the 21st century. As for renewable sources of energy, wave power appears most promising—a 600 mile stretch of coastline could provide about



half the U.K.'s electricity needs, the report estimates—but it is likely to prove more expensive than nuclear energy.

Therefore, the study concludes, the U.K., like the rest of the world, will face a gap between energy supply and demand "which nuclear fission at present offers the only practical possibility of filling." On the vexing questions of safety and environment, the evidence suggests that stringent licensing and supervision of nuclear plants should continue to safeguard against any emissions of radioactivity, the report says, and technological advances should take care of the waste storage problem.

In response to a question in Parliament, Mr. Wedgewood-Benn said it should be possible by 1990 to convert liquid nuclear waste into blocks of inert, insoluble glass.

Sensitive to the criticisms of anti-nuclear groups in this country, Wedgewood-Benn is carefully to say in the preface to the study that it "ought not to be taken as a complete statement of the government's views" on the

part to be played by nuclear power in the future, and that if safety and environmental problems cannot be solved satisfactorily, "either other forms of energy would have to be used or consumption somehow reduced."

That the Department of Energy as a whole thinks this unlikely and is prepared to persuade public opinion is evidenced by an address by Sir Jack Rampton, permanent secretary to the department, reported last month. Sir Jack summarized much of the department's evidence and expressed his own faith in technology and "the inventive genius of man" which he thought could solve both environmental difficulties and the demand for energy. Cutting consumption, he said, is neither possible nor necessary. Both conservation and environmental safety are "desperately important... but energy and its use all mean change and some risk. There is no escape from this however much we may do to adapt, contain, mitigate and reduce environmental effects."

ALAN MASSAM

## Economic and Political Hurdles Hamper Chile's Environment Program

*SANTIAGO, Chile*—A six-year plan to rid this city of smog is the first glimpse of hope breaking through Chile's lack of concern for its environmental problems. But few observers here hold out much hope for the plan's success.

Santiago's rapid growth and industrial concentrations have developed without regard to the prevailing winds so that the city is subject to massive smog attacks held in by the surrounding Andes.

First step in the plan is to shut down the 421 smokey downtown incinerators. One of the worst offenders is the Central Bank's unit which is used to burn up old escudo notes. The conversion of the inflation-ridden escudos back to pesos, scheduled to begin this month, will make matters worse. While it is clear the escudo destruction will go ahead, it is not at all certain the March, 1976 deadline issued by the National Health Service for shutting down the incinerators will be met.

Chile's air, water and soil are polluted with contamination levels similar to those of more-developed countries. The copper mines, the cellulose plants, the primitive agricultural practices, the dense urban dwellings all contribute to these environmental problems.

These growing problems have led to the naming of special committees that usually pay only lip service to attacking them. The national press is sympathetic to environmental issues, but the lack of funds and qualified personnel, as well as a lack of decision-making power on the committees, mean that a significant Chilean environmental policy is still far in the future.

One of the committees—the National Commission on

Environmental Contamination—is chaired by the head of the National Health Service and includes representatives of several ministries, municipalities and government agencies. Its task is to coordinate environmental efforts, to define the problems, study possible solutions, review legislation, improve natural resource utilization and educate the public.

No funds have been provided to carry out this work, although it is suggested the proceeds of such fines as those for defective car exhausts and incinerators be diverted for this purpose. The commission is to present its plan to the UN Environment Programme in Nairobi through diplomatic channels, since there are no funds to send an environmental scientist.

The copper mining industry, source of 80 per cent of Chile's foreign income, is also one of the worst polluters. Most of the industry is isolated in desert areas where it does not damage agriculture, but in some cases mine and smelter wastes enter the ocean, fanning out in deadly clouds fishermen have learned to avoid.

The Caltones smelters 70 miles south of here are a visible problem about which nothing is being done. Other smelters in the Central Valley have killed lentil farm lands. Large landowners of the Aconcagua Valley north of here won a legal battle against La Disputada de las Condes smelters, which were closed and replaced by a concentration plant. But wastes from the same mine kill fish in the Mapocho River. There are no studies on the effect of these waters on the farmlands which use them.

The current economic crisis in Chile, resulting from declining copper prices and rising oil prices, as well as the country's political disruptions, means that environmental protection is not likely to be assigned the priority it demands.

ALEJANDRO KOFFMAN



## Spain's Paper Industry Is Major Source of Water Pollution

**BARCELONA**—Concern is mounting in Spain over the environmental impact resulting from the country's rapidly expanding paper industry. Output is expected to triple during the period 1970 to 1977 after increasing by 50 per cent during the previous five-year period, according to OECD figures.

The paper industry accounts for more than 30 per cent of the water pollution attributed to industry in Spain, and is the largest industrial water polluter, exceeding even food industries.

According to studies carried out this year by the Banco Urquijo here, there is an awareness of these pollution problems in the industry, but progress toward solving them is slow. A still unresolved question is whether government or industry should accept the financial burden of water cleanup.

Some rivers are so badly polluted that the industry itself must resort to purifying the water before, rather than after, use. The Banco Urquijo study found that two of four paper companies on La Tordera River must either install new purification facilities or bring water in from elsewhere.

However, statistics on recycling of waste paper in the Spanish industry are impressive. According to J.L. Asenjo of the Spanish Paper Institute, consumption of old paper as a raw material for new paper rose from 6 per cent (10,000 metric tons) in 1950 to 34.1 per cent (457,000 metric tons) in 1972. Asenjo believes that recovery greater than 40 per cent is not possible without a method for requiring the public to separate uncontaminated paper from other solid wastes.

While water pollution from Spanish paper mills remains a problem, the industry is moving toward using fewer trees for its production. Sugar cane bagasse is used as a raw material in Motril, although conifers must still be used to produce paper with more tear-strength than is provided by the short-fiber bagasse.

WILLIAM BAIN

## Saudi Arabia Reclaims Desert

**HOFUF, Saudi Arabia**—The government of Saudi Arabia is planning to spend \$12 billion of its oil wealth in an effort to turn the eastern Saudi desert green. This ancient oasis 180 miles east of the capital city Riyadh is the center of the grandiose desert reclamation program, which is part of a \$143.5 billion, five-year development plan.

In all, 4.18 million hectares are to be turned from sand into farmland. "But this will require at least half a century," according to Taher Ebeid, undersecretary of agriculture. "We have the money, we have the water resources. What we don't have is an adequate infrastructure to carry out this ultimate objective."

Today, only 570,000 hectares of farmland are cultivated in this desert monarchy. According to Ebeid, the

government envisions improving and regulating underground water resources and installing an efficient drainage network to reduce salinity in various areas. Five research centers have been set up: in Jidda, Riyadh, Hassa, Qatif and here in Hofuf. They operate model farms and carry out experiments dealing with fishing, insecticides, fodder, seeds, fertilizer and poultry.

There are 17 medium size dams in the country, and these will be increased to 23, according to Ebeid. Most of them control rain waters in the southern regions of Jaizan and Abha.

The \$70 million Hassa irrigation and drainage program increased the cultivable area around Hofuf from 8,000 to 20,000 hectares. Hofuf was once a rest area for nomadic bedouins, and the government has earmarked \$30 million for resettling these tribes.

## Taiwan Opts for Nuclear Power

**TAIPEI, Taiwan**—Within a decade, this island is planning to have the highest ratio of nuclear power in its total electric output of any nation in the world.

Heavily dependent on expensive oil and imports, Taiwan was deeply shocked by the oil embargo and subsequent price increases of 1973 and 1974. The country was 70 per cent dependent on outside energy sources, primarily Persian Gulf oil; the long-range program already planned for nuclear power plants is being pushed vigorously by the Chinese Nationalist leaders.

Next year, the first of six scheduled atomic power units will go into operation at a site between this capital city and Keelung. A second of the same size—636 MW—will follow at the same location.

Two 985 MW units are to be constructed at another northern location, and two 954 MW units are planned for the southern port of Kaohsiung by 1985.

When operational, these plants will provide 50 per cent of Taiwan's demand for electricity. The sites have enough space for eight future reactor units.

Last year, Taiwan had to import 72.3 million barrels of oil to fuel its thermal power generating system, which provides nearly three-fourths of the island's electrical demand. The nuclear system will not replace the existing oil plants, but will obviate the need for any new fossil-fuel plants after 1976.

Nuclear capacity will be equivalent to some 55 million barrels of oil annually, and Taiwan Power Company (Taipower) calculates savings of several hundred million dollars per year in imported fuel costs.

The dramatic conversion in generating method is requiring a great deal of planning, according to the company, including increasing the distribution system capacity, building four hydroelectric generators as backup, and studying the proposed nuclear sites from the viewpoints of safety and environmental protection.

The reactors being purchased in the program are Westinghouse and General Electric models.

ARTHUR MILLER



## Special Report: Haiti Is an Object Lesson in Ecological Disaster

**PORT-AU-PRINCE**—Haiti—the beautiful, mountainous country that forms two-thirds of the Island of Hispaniola—was once France's richest and most productive colony. Today it is an ecological nightmare, a tragic object lesson to other developing countries.

Discovered by Columbus in 1492, the island was ruled by Spain until 1697 when the western portion was ceded to France. With the help of thousands of African slaves, Haiti became France's foremost colony, exporting more foodstuffs, wood, minerals and spices to Europe than the American colonies sent to England.

Vast irrigation systems tapped clear rivers flowing from the virgin hardwood forests and turned the central Artibonite valley into a lush agricultural area. Unique in the Caribbean in that its highlands are temperate, Haiti shipped not only tropical produce but also apples, strawberries, potatoes and other cooler zone produce. A highly cultured society evolved of native French and mixed-blood mulattoes. Wild fowl of many species lived on the island's lakes and saltmarsh ponds. James Audubon, the naturalist and painter of birds, was born in Haiti.

**Revolution**—But the ferment of the French Revolution encouraged the slaves to rise up and throw off their French masters, and Haiti became independent in 1804, the first Latin American country to do so.

The freed slaves set about destroying every vestige of their former masters. Plantations were burned, stone houses torn down, livestock driven from pastures, roads ripped up and the vast irrigation system demolished. Two separate regimes emerged—the north ruled by Henri Cristophe, a former slave who declared himself king, and the south by Alexandre Petion, a mulatto who declared himself president.

In 1820, President Boyer unified the country and conquered the eastern, Spanish-speaking part, Santo Domingo. But in 1844, Santo Domingo broke away once more and Haiti fell into a long period of instability, with 22 presidents between 1844 and 1915.

**Suffering Land**—Haiti's history is bloody and disjointed, and the once bountiful land has suffered. Today, the country's five million people are among the poorest in the world; the land produces less and

less each year while the population soars.

Haiti's vast forests are depleted. Haitians use charcoal for cooking and over the years they have denuded the mountains. Erosion, once checked by the forests, now deposits thousands of tons of sandy soil each year into the once-fertile valleys. Flash floods pour down scarred arroyos and empty their silted waters into the sea. The irrigation system was never rebuilt. The rivers are sandy dry washes; the lakes are gone; one rarely hears a bird.

Rural Haitians eke out a marginal living through primitive agriculture, travelling miles each day looking for wood to make charcoal. Slash and burn agriculture is the rule. Small attempts are made to reverse the trend—"Communal Forests" are planted with great pomp, but thousands of trees are cut for every one planted in these small patches.

There are no protected species, no closed seasons for fishing. Tiny, egg-laden fish are caught and eaten; immature lobsters are in the markets. Now few fish are left along Haiti's shores.

The country's road network is also in a state of ruin, although some reconstruction is underway thanks to grants and loans from the U.S., World Bank, France, and others. Agricultural methods are being improved by missions from as far as Taiwan and Israel.

Haiti exported more coffee in 1914 than in 1973; in 1950, it exported 33.4 million kilos of sisal, in 1972, 4.1 million; in 1950 it exported 31.3 million kilos of sugar, in 1972, 20.7 million. In 1974, Haiti had to import rice to feed its people, and the downward cycle continues.

Today, Haiti's famous mahogany carvings are made from logs imported from Honduras and Brazil. Haiti's mahogany is depleted.

Some observers fear it is too late to reverse the ecological disaster on Haiti. The eroded and leached mountain soil can no longer support tree growth. There are vast desert areas, and sections of living coral reef have been blasted away. The Haitian government is unable to cope with the massive problems of rehabilitating the entire country and enough foreign assistance to do so is not forthcoming.

The rural Haitian is concerned mainly with survival. To a hungry person, conservation and concern for future productivity are useless abstractions.

ARTHUR CANDELL



## Briefs . . .

### Solid Waste Projects for Singapore Approved

The World Bank has approved a \$25 million loan to help finance a \$55 million solid waste project in Singapore. Included will be construction of a 1,200-metric-ton-per-day incinerator and purchase of about 200 collection vehicles. The incinerator will be designed primarily for domestic and trade refuse, but will also be able to handle oil and other industrial wastes.

Singapore's solid waste load has increased from 1,150 metric tons per day in 1969 to about 1,790 metric tons per day in 1974. It is expected to reach 2,600 metric tons by 1980 and 3,800 by 1986. Land space is at a premium in Singapore, and less and less can be expected to be available for waste disposal.

### Energy Saving for U.K. Industry

The British government's newly formed Energy Thrift Unit has placed contracts worth \$95,000 with three industrial research associations—the Electrical Research Association, the British Nonferrous Metals Production Centre and the Production Engineering Research Association—to develop information on energy use in their respective industries. The Unit is expected to spend \$3.5 million investigating and advising industry on its use of energy.

### Rio Cracks Down on Noise

Silence zones are being imposed on the whole downtown and beachside residential areas of Rio de Janeiro in a desperate effort to combat the city's noise pollution (*WER*, Feb. 17, p. 2). Rio's average decibel count stands at 98, well above the 85 considered maximum for human well-being. City authorities decided

the easiest way to reduce noise a little was to forbid car honking and traffic police whistles. The experiment was tried for a week in Copacabana, where it worked well enough to be tried elsewhere. One newspaper reported the noise level has decreased by 20 decibels at one location.

### Australia Considers a Tax On Litter Components

The Australian Environmental Council is considering an all-state tax on materials known to be major components of litter. Proceeds would be used to finance waste control and recycling research. According to a proposal presented by Peter Jones, chairman of the council and also minister for conservation and environment in the state of West Australia, litter sources would be taxed to yield the equivalent of \$1 per capita per year. Australia's total packaging expenditure in fiscal 1975 was estimated at more than \$1 billion. The tax would be an excise duty and would require legislation by the federal government.

The Australian Environmental Council claims industry support for its tax scheme, in contrast to a plan being advanced in South Australia that would tax beverage containers which has been widely opposed by the industry.

### Saudis Expand Desalination

The Saudi Arabian Minister of Agriculture and Water, Sheikh Hassan Mishari, has signed a contract with the British consultants, Ewbank and Partners, for the third stage expansion of the Jeddah sea water desalination plant. Value of the contract is about \$5 million. The British firm will provide consultant and supervisory services for the implementation of the expansion which will boost the plant's output to 20 million gallons per day and 200 megawatts of power.

### Athens Updates Its Sewer System

The city of Athens is undertaking a \$250 million, seven-year project to modernize its sewer system. A 5,000 km sewer network for waste water is planned, and a 1,000 km one for rainwater. So far, 34 per cent of the former and eight per cent of the latter have been constructed. The project also includes widening the existing main sewer and extending it further into the sea wall beyond the present 120 meter depth, as well as biological treatment of the wastes.

The central sewer was completed in 1959 and was designed for a city of 17,500 acres. Athens today covers 62,500 acres. Today's sewer system provides only inadequate service to 70 per cent of the city, according to Christoforos Stratos, Greek minister of public works, the remaining 30 per cent (800,000 persons) being without sewage facilities and served by disposal trucks. Industries near Athens have no facilities and discharge their wastes directly into the sea.

Conditions in other Greek cities are also chaotic, according to Stratos, and studies are underway, particularly in Salonica in northern Greece.

### Flood Warning System for Pakistan's Indus Basin

The United Nations Development Program (UNDP) has signed an agreement to assist the government of Pakistan in establishing a flood forecasting and warning system for the Indus River Basin. In addition to increasing the safety of the region's inhabitants, the project also will aim at developing a more-effective and rational use of water resources in irrigation, hydropower, drainage, water supply, navigation and agriculture.

UNDP's contribution will be \$800,000 in equipment and consulting services. The three-year project will be executed by the UN's World Meteorological Organization,



the West Pakistan Water and Power Development Authority, and the irrigation departments of Sind and Punjab provinces.

### Cheaper Hydroponics Claimed

A cost savings of almost 75 per cent is claimed for a new hydroponics system developed by Agropics Services, Ltd., of Freeport, Bahamas. Key to the new system is the use of "monocontainers" which cost about 1/4 as much as components used in previous systems, according to the company.

A pilot project has been operating for eight years in Bermuda, and the company has installed several of its systems for a major hotel chain throughout the Caribbean. The chain is planning more units in the future.

Hydroponics is the cultivation of food plants in liquid solutions containing the necessary nutrients instead of in soil. It is considered promising for areas like the Caribbean islands which must otherwise import a major part of their foodstuffs.

### Diesel Oil Pollutes Greek Air

Locally refined diesel oil is of poor quality and is responsible for air pollution in Greece's big cities, particularly Athens, according to George Voyatzis, the country's Minister of Transport and Communications.

Voyatzis asked the Ministry of Industry to take immediate measures to improve the refining of diesel oil and to reduce its sulphur content, now from 2.5 to 4 per cent, compared with 1.5 to 2 per cent in other European countries. He added that if diesel oil quality is improved concurrently with controls his ministry is imposing on the operation and maintenance of diesels, "then we can expect a sharp decrease in atmospheric pollution in Athens and the other big cities."

### Mexico Protects Historic Sites

With 11,000 identified archeological zones within its national territory, Mexico is formulating its first federal law to impose jail terms and fines against persons who rob the sites, according to Eduardo Matos Moctezuma, director of prehistoric monuments for the National Anthropology and History Institute. International agreements for the recovery of illegally exported Mexican artifacts have been in effect since 1971 with the U.S. and other countries.

### Mexico Sets Aside Underwater Nature Study Sites

The Mexican government has created four natural underwater environmental areas as sites for the study, preservation and reproduction of native marine life. Newest of these areas is near the Pacific coast resort town of Puerto Vallarta, where one square kilometer has been closed to fishing and other unauthorized trespass.

The other areas are near Guerro Negro on the Pacific side of Baja California North; Cabo San Lucas, where the Pacific meets the Gulf of California ("Sea of Cortes") at the tip of Baja California South; and Isla Mujeres, the island off the Yucatan Peninsula, where the Gulf of Mexico meets the Caribbean.

### Colombia Studies Land Reclamation and Energy Use

Colombia's state-financed National Development Fund has loaned the country's wildlife service, INDERENA, over \$10 million for a series of studies on land reclamation and energy use in the Cauca and Magdalena river basin. Three quarters of Colombia's 23 million people live in these basins and generate 90 per cent of the country's gross national product. Fund officials estimate that five million acres are underfarmed in this area because of

periodic inundations and that the basins have an electrical potential of 25 million kw—100 times the country's present energy output.

INDERENA will oversee studies by the Agustin Codazzi Institute, the Colombian Meteorology and Hydrology Service, the Colombian Agricultural and Livestock Institute and the National University.

### British Ford Recycles Metal

Up to 10,000 metric tons of metal for recycling is expected to be recovered annually at Ford Motor Company's Thames Foundry at Dagenham, Essex, in England, through the installation of a new metals separation and recovery plant.

The equipment, which cost more than \$150,000, consists of a vibrating hopper, an inclined conveyor and a magnetized rotating drum which removes molding sand for reuse and separate larger pieces of scrap metal for recycling. Under a previous reclamation system of a scavenging crane with a magnet, only a limited percentage of the larger metal scrap was recovered.

### Bogota Buys Buses and Trolleys

The municipality of Bogota, Colombia, has negotiated the purchase of 800 buses and trolleys for \$26 million from the Soviet Union, Hungary and Spain as part of an expansion program to improve mass transit and reduce pollution. The vehicles will be paid for in pesos because Colombia has a favorable trade balance in coffee and textiles with these countries. The Russians have begun shipment of 200 trolleys in a \$12 million transaction, while Spain's Pegasso is delivering 350 diesel buses for \$5 million. Pegasso is loaning the Bogota Transport Authority an additional \$8 million for maintenance facilities. The authority also will receive 250 Ikarus buses valued at \$9 million from Hungary.





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## EEC Initiates Program in Ireland To Develop Low Cost Solar Cells

**CORK**—The European Economic Community (ECE) has launched a major energy research program in the Irish Republic to develop high efficiency, low cost solar cells as an alternative source of energy. Under the direction of Dr. G. T. Wrixon of the Department of Electrical Engineering, at the University College of Cork (U.C.C.), the project is being funded by the Common Market's energy research division; Dr. Wrixon's laboratory was funded 18 months ago by the national research boards of Great Britain, France, and the Federal Republic of Germany.

Basically, a solar cell is a device which converts sunlight into electricity. Despite its many different configurations, it always involves the use of a semi-conducting material. The type to be investigated by Dr. Wrixon is called a Schottky-barrier cell and in essence consists of a very thin (ten-millionths of an inch) transparent film of metal covering a crystal of a semiconductor known as gallium arsenide. Although efficiencies greater than 20 per cent are possible with such a device, the most challenging problem is that of keeping the cost competitive with other energy producing mechanisms. It is estimated that this will necessitate a cost-reduction factor of about 100.

Dr. Wrixon, who is 36, is a U.C.C. graduate and obtained his doctorate at the University of California at Berkeley. Prior to joining U.C.C. he spent two years in Holland working on aircraft electronic systems and five years at Bell Telephone Laboratories in New Jersey, specializing in developments in high frequency communications.

Elsewhere in Ireland, an organization has been established to foster research into and use of solar energy. The new Dublin society believes that, in the coming years, solar energy will form a vitally important element of the national energy policy. The facts it has collected show that the total amount of solar energy falling on Ireland each year is nearly 900 times as great as the national consumption of energy in the entire country in 1973; even at low levels of efficiency, an area of 760 square miles in size could grow enough "energy crops" to generate all the country's electricity.

Founding members of the Irish Solar Energy Society include representatives from the National Science Council, the Department of Public Services, the School of Architecture in University College Dublin, the Irish

Industrial Development Authority, Bolton Street College of Technology, and two semi-official bodies—the Institute for Industrial Research and Standards and the National Physical Planning Institute.

TOM MacSWEENEY

## British Environmentalists Force Postponement of Highway Inquiry

**LONDON**—Once again last month environmentalists forced the adjournment of a major motorway public inquiry in Great Britain. In previous years these inquiries have appeared merely to rubber stamp the plans of the Department of the Environment (DOE) to build new roads. Blockaded doors, violent scuffles, and concerted chanting made conduct of the meetings impossible. There were nine adjournments during the inquiry into the Aire Valley trunk road in Yorkshire, which is still in abeyance while procedure is discussed. The M (Motorway) 3 inquiry at Winchester, Hampshire, was adjourned for the third time on July 15th.

These tactics have attracted national publicity, the more so because they are so uncharacteristic of both the situation and the people. At Winchester the head of one of Britain's most prestigious public schools was one of more than 100 persons ejected for disruptive tactics. The wife of the Dean of Winchester Cathedral led fellow protestors in a communal prayer during the meeting urging that the spirit of truth, justice, and democracy might prevail. According to Lord Avebury, the President of the Conservation Society, which is one of the environmental research and pressure groups involved, their normally civilized supporters have been driven to outrageous behaviour as the only means of arousing public awareness about issues which they think are being deliberately concealed by government officials.

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Currently, Britain has plans for a 3,100-mile motorway system to by-pass centers of population and to cope with projected increases of traffic flow. Ever since Britain joined the European Economic Community (EEC) it has acquired heavier transport lorries and now has a higher proportion of road transport than its European partners.

The new plans will eventually be presented for Parliament's approval by the Secretary of State for the Environment, whose department is then responsible for their implementation through 10 national Road Construction Units. But first this necessitates consultation at local and central government levels with all the road construction interests involved. Thus it can take years for a motorway project to reach the public inquiry stage under the aegis of the DOE, which appoints the Inspector and sets his guidelines. One of these disallows "questions to departmental representatives which in his opinion are directed to the merits of government policies."

DOE officials see this simply as a means of protecting their unbiased role as executive civil servants. But in practice, say the protestors, it gives them dictatorial powers for pushing through plans which they have conceived and implemented, and for effectively silencing any opposition. For by ruling out any discussion on government policies, the need for a motorway is never debated. Only the technical details of constructing it in any one area come up for discussion.

Talking about a stretch of motorway in this sort of vacuum is an illegal interpretation of the 1959 Highways Act which set up the inquiries, according to John Tyme, the Sheffield Polytechnic lecturer who has represented both groups of objectors. The DOE's interpretation of what may be discussed, he says, "defeats the whole purpose of public participation and the public inquiry system."

He has gained some legal support for his argument that the inquiries are illegal and should not take place. Meanwhile, it was only when the inspectors proceeded with the inquiries without allowing his objections to be heard that the disruptive tactics began.

Parliament has not debated the motorway system since 1971 in spite of the amount of national money and resources involved and the changes in the world energy situation. All this time the motorway program has been rolling on.

This makes objectors even more anxious to make use of what they see as the right and full powers of the public inquiry system. They want motorway expansion to be viewed against such wider national issues as resources for other transport systems, the government's declared policy on energy conservation, and priorities in land use.

Tyme and his supporters, described by one Member of Parliament as "middle class mobsters," have received a good deal of criticism for their methods. Nevertheless, they have certainly achieved their objective of arousing public awareness and have received support not only from environmentalists but also from people concerned with the issue as one of democracy versus bureaucracy.

BARBARA MASSAM

## Environmentalists Oppose Canal Construction Across Nile River

**CAIRO**—Sudan is going ahead with plans to drain one of the world's largest swamps in spite of growing opposition from environmentalists, who fear that wildlife and the three million Dinka tribesmen living in the 38,000 square-mile area will be adversely affected.

The Sudanese intend to dig a 175-mile canal across a huge bend in the White Nile, from Jonglei in the south to the Sodat River above Malakal in the north. The purpose is to stem the loss of water through evaporation and seepage while increasing the flow to northern Sudan and Egypt. Egypt and Sudan will share the cost of the project equally.

Ultimately the scheme for controlling the Nile's flow may include water storage projects at the river's source in the equatorial lakes of Central Africa.

Conservationist groups have yet to make a formal protest but it is understood that environmental groups in Holland and France have been alerted by the UN Environment Programme in Nairobi.

The primary contractors are Grand Travaux de Marseilles of France, which will dig the canal, and Illaco-Euroconsult of Holland which will do much of the related land reclamation. Preliminary work has begun, but major digging is not expected to start until some time in 1978.

Sudan hopes that the canal and the new agricultural land along its bank will help persuade the Dinkas and other tribes in the area to give up their nomadic way of life and settle down to a life of farming.

The Sudanese government is extremely concerned about the tribal reactions in an area where for 17 years it fought a strong secessionist movement among the non-Arab peoples of southern Sudan.

JOHN M. BRADLEY

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## Exxon Wins Contract To Exploit Colombia's Rich Coal Deposits

**BOGOTA**—For a large but undisclosed sum, Exxon has outbid Kennecott Copper's Peabody Coal subsidiary for Colombia's rich coal deposits on the Guajira Peninsula after a two-year battle for the high-energy fuel. British Petroleum and Shell also were bested by Exxon in bidding for the estimated 400-million tons of low-sulphur steam coal on Colombia's Caribbean coast.

Although open-pit mining will probably be used because it is the cheapest and fastest method, environmental considerations will play an important role. The contract that Exxon bid on contains a hefty clause on the protection and reclamation of the flora and fauna. Moreover, in its bid to the Colombian government Exxon included a listing of its past environmental expertise in dealing with the surface mining both of coal and of uranium.

Basically, this technique sets aside the most fertile soil and once the mining at a given site is completed, the subsurface and topping are replaced. But such restoration of the land does not necessarily match the original. Sometimes it is deemed wiser to develop new or improved uses for the reclaimed land—either for farming, grazing, or forestry.

In this connection, an Exxon environmental spokesman told *World Environment Report* that "Exxon operations everywhere in the world—whether in the U.S. or in such countries as Indonesia or Thailand—function with concern for the environment and do so regardless of weak or non-existent legislation or regulations. We have also found," he added, "that it is cheaper to reclaim the land as soon as possible after strip-mining has been completed. The longer a company waits on doing so, the more expensive and difficult the task becomes."

Although Peabody had first claim to the Cerrejon fields, having signed a preliminary exploration contract with the government-owned Industrial Development Institute (IFI) in 1972, it has not been able to reach agreement with the Colombian government, which recently upped the stakes for the coal as a result of the energy crisis. Located some 1,000 miles south of Florida, the fields are a promising source of supply for pollution-conscious electrical and power utilities on the U.S. East Coast.

Peabody was originally to have developed one of three fields, while the remainder, belonging to the state petroleum enterprise Ecopetrol, were offered for bidding to 17 foreign oil companies in January. Although Peabody did not participate in this bidding, Colombian officials privately stated that Peabody would have to match the terms offered by the winner, which was Exxon.

The fields are expected to produce exports of over five million tons of steam coal when they come on stream in 1983.

PENNY LERNOUX

## Lake Shared by Three Countries Makes Ecological Recovery

**MUNICH**—Lake Constance—shared by Germany, Austria, and Switzerland—is en route to ecological recovery, according to aerial surveys being made this summer.

Now, as in the past, monthly samplings and measurements are being taken by the International Water Conservation Commission at selected points throughout the lake. But these only provide one factor: the nutrient count, or to put it bluntly, the phosphate level. These checks are important in the Spring when winter storms and cold water from Alpine rivers have penetrated the lake. But summer measurements are not so indicative since plankton and algae consume the phosphates in the summer months, reducing the crucial nutrient level.

Although limnologists know some of the phosphates can be traced to river sewage and waste, they lack accurate knowledge of how the nutrients circulate in the lake—how much stays in the surface level feeding the algae and how much settles to the cold deep lakebed where it would have no real effect upon the biological balance.

The aerial survey is attempting to discover the circulation patterns of the lake waters: how much deep water is drawn up to the surface by winds. Nutrients rising from the lakebed would automatically increase vegetation, which in turn increases animal life.

Professor Hans-Joachim Elster of the Walter Schlienz Institute, Freiburg, is conducting the aerial surveys, backed by the Federal Republic of Germany's Research Association.

The aircraft are measuring the surface temperature and using spectral photometry to check for water color. Green means algae and when this is sufficiently dense, it will mean nutrient has been brought up to the surface.

When the aircraft spot this development, they radio the flagship of the lake's research fleet, which in turn calls in other vessels to conduct an on-the-spot probe. The results these ships obtain are expected to give limnologists an accurate measurement of the recovery of Lake Constance.

WILLIAM G. MAHONEY

## Mexico Marshals Forces to Clean Up Contamination in Major Rivers

**MEXICO CITY**—Serious technical studies are finally underway in this country to resolve the problem of contamination of this nation's major rivers. The Water Uses and Contamination Prevention department of the Sub-secretariat of Environmental Improvement hopes to achieve at the least the same sort of success already attained in cleaning up air pollution in the capital.

Although industrial waste is the major pollutant of



rivers emptying into the Pacific Ocean and Gulf of Mexico, household detergents rank a close second, a department spokesman said, perhaps because there are no biodegradable detergents yet in Mexico. Thus, he added, the noxious action of the detergents continues even when they are washed out to sea.

Elroy Urroz, an engineer in charge of the water contamination and uses department, is mainly concerned about contamination in river basins in which natural vegetation has died and fields irrigated by the river waters have been poisoned. Major contaminated basins are the Balsas, Nazas, Coaguyana, Culican, Fuerte, Conchos, San Juan, Guayalejo, Blanco, Panuco, and the Lerma-Chapala-Santiago system. Distressingly, he said these rivers are not restricted to one area of Mexico but are widely separated.

The last two named by Urroz are the most contaminated, he said. The Panuco, which runs into the Gulf of Mexico, is heavily contaminated by the drainage system of Mexico City, while the Lerma system receives massive industrial wastes from the central Valley of Mexico.

In declaring his department's determination to alleviate river contamination, Urroz pointed to successes by the sub-secretariat—a part of the federal Secretariat of Health—in cleaning the air of Mexico City. At the time the sub-secretariat was created four years ago, there were an estimated 23,000 open industrial chimneys in the metropolitan area. Now only 30 remain, he said, and these will probably be gone by year's end.

Mexico is one of five nations which has a national inventory of industry, he said. Of more than 2 million industries listed, some 788,000 produce contaminants. Of these, some 40,000 already have installed anti-contamination equipment, and an additional 30,000 other businesses have installed some kind of anti-contamination devices, he said. By November 30, it is hoped that a total of 100,000 businesses in the industrialized central Valley of Mexico will have them.

KATHERINE HATCH

## Anti-Pollution Expenditures In Japan Show Marked Decrease

**TOKYO**—Although anti-pollution expenditures of Japanese industry have increased annually at a speedy tempo since 1965, it is expected that for fiscal 1976 they will drop by 5.7 per cent. Total purchases of anti-pollution equipment between April of this year and the end of March 1977, the Ministry of International Trade and Industry (MITI) recently reported, will fall to \$3.3 billion, as opposed to FY 1975 when it amounted to slightly above \$3.5 billion.

Data collected and released by MITI disclosed that the current average share rate of anti-pollution investments in Japan will decline from 18 per cent in 1975 to 15 per cent.

MITI authorities believe that most large industrial

corporations have more or less completed their anti-pollution investment programs or are winding them down. However, Japanese governmental regulations governing pollution are considered likely to be tightened further in fiscal 1977 and 1978 and this situation may require the nation's major industrial companies to step up their spending in this sector.

The heaviest cutbacks in spending on anti-pollution equipment are occurring among the producers of petroleum products, paper-pulp goods, petrochemicals, textiles, cement, and coal mining. In these industries the rates of cutbacks reach from a low of 34 per cent to a high of 76.7 per cent.

Industrial groups which intend to spend more for anti-pollution equipment in fiscal 1976 include those engaged in production of steel, electricity, machinery, appliances, and building materials. The rates of increase range from a low of 4.4 per cent to a high of roughly 60 per cent.

ALVIN E. CULLISON

## Paper-Mill Sludge in Mur River Makes it Austria's Dirtiest

**VIENNA**—Although one of the most prosperous and environmentally conscientious countries in Europe, Austria continues to have its air, and particularly its water, pollution problems. It has, for example, grossly underestimated the effluvia by-products in the manufacture of cellulose, papier mache, and paper, and is being once again forced to safeguard the eastward-flowing Mur River, the country's dirtiest, from becoming a bath of pulp waste as it flows through Styria into Yugoslavia.

Apart from sizeable domestic requirements which keep some dozen pulp mills along the Mur working a steady seven-hour day, cellulose and its derivative products have recently become major export items. All the factories there have moved into overtime production—a fourfold increase in the last year alone. As a result, the recycling plant has been overwhelmed by the mass of pulp sludge driven through its machinery, allowing hundreds of untreated tons to spill out into the Mur.

Another difficulty is that these reprocessed waste materials are made into a cheap form of fertilizer which is so unpopular with local farmers that they refuse to buy it at almost any price. Thus stocks of recycled, chemically-impregnated sludge are proving almost as much of a nuisance as the untreated sludge itself.

Factories, on the other hand, complain that the ministries plan solely for a static environmental status quo whereas they have to cope with a steadily expanding situation. One factory manager told *WER* that it would be more sensible if the monitors put greater emphasis on future environmental planning rather than on merely enforcing existing legislation. "Trade moves and industry must move with it," he said, "and that means more dirt as well as more national income."

E. B. BROOK



## ECE Plans Major Human Settlements Seminar in Ottawa Next Year

**GENEVA**—The long-term impact of energy considerations on the planning, construction, and improvement of human settlements will be the theme of an international seminar in Canada next year. The seminar is being organized by the Committee on Housing, Building and Planning of the United Nations Economic Commission for Europe (ECE) with the Canadian Government as host. It will be held in Ottawa, Oct. 3 to 14, 1977.

National delegations, the ECE expects, will be composed of senior officials who have the responsibilities for advising governments on community planning and development, and the design, construction, and improvement of buildings, with, in addition, architects, planners, engineers, and environmentalists.

The ECE noted that about half the total energy used in Europe and North America goes into the construction and occupation of buildings.

Seven questions have been selected for the discussion of the energy factor in the planning and development of the community as seen from the physical planning, social, environmental, and economic points of view. Participants will try to assess the effects of regional energy considerations on community planning and development, and the extent to which the physical layout of the constructed environment can reduce energy requirements by, for example, rationalizing transportation and distribution routes, and making the best use of natural heating and cooling.

The second subject area of the seminar will be the economic, social, and environmental implications of energy in the design, construction, and improvement of buildings. Topics to be considered include the improvement of thermal performance by insulation, reducing or increasing window areas, reducing air infiltration, ventilation, and artificial lighting, and better technical installations. Limits of an aesthetic, social, physiological, or psychological character on what can be done in this field and the overcoming of such constraints will be discussed.

WILLIAM G. MAHONEY

## Chlorine Gas Escape in Brazil Echoes Recent Italian Experience

**RIO DE JANEIRO**—A Brazilian firm called Companhia Quimica Reconcave (CQR), which was responsible for what is called here "Brazil's Minimata," is making headlines again—this time with an apparent chlorine gas escape. Some 2,000 residents of a Bahia slum near the chemical plant experienced breathing difficulties, irritation in the eyes, nausea, and shakes. Hundreds were treated at hospitals and some were kept for observations but there were no fatalities.

The company claims it was not an escape "but merely a

series of circumstances—low tide and strong winds in the opposite direction—which resulted in the chlorine gas that is usually dumped into the ocean to be carried back ashore."

One company official said the panic in the area was a reaction to the stories about the poisonous gas in the Italian city of Seveso (*WER*, Aug. 30, p. 1). "The people must have been conditioned by the repeated news stories about the gas intoxication of the population of Seveso and that must have contributed to spreading the panic," he said.

Newspapers calculated that the gas discharge was around 50 to 80 ppm whereas 10 ppm are sufficient to make it noticeable.

As this chlorine controversy continued, a Japanese professor, Jun Ui, a world authority on mercury pollution, arrived in Bahia for a first hand look at the problem caused by mercury discharge by the CQR. His first observation was that the situation was bad but he added that he would have to do a lot more work and run many tests before compiling definitive results. He did say, however, that the CQR would probably have to be moved, and, even in that event, there is probably enough mercury in the water to remain a threat for a long time.

G. HAWRYLYSHYN

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## In Brief...

### Congress Expected To Pass \$10 MM UNEP Appropriation

The House-Senate Conference Committee on Foreign Appropriations Bill for Fiscal Year 1977 met on September 15 and informally agreed to the figure of \$10 million as this country's contribution to the United Nations Environment Programme (UNEP). This is double the amount originally approved by the House.

There seems little doubt, therefore, that Congress will finally pass this much-debated item. And looking farther ahead, the Office of Management and Budget has recommended a contribution to UNEP of \$15 million for Fiscal Year 1978.

### Geneva Seminar to Discuss Inorganic Chemical Pollution

An international seminar, to be held in Geneva this November, will discuss air pollution problems of the inorganic chemical industry. The seminar is being organized by three subsidiary bodies of the United Nations Economic Commission for Europe (ECE): the Senior Advisers to ECE Governments on Environmental Problems; the Chemical Industry Committee; and the Working Party on Air Pollution Problems. Delegations to the seminar will be selected by participating governments.

Four main topics have been chosen for debate. The first concerns air pollution problems of the inorganic acid and fertilizer industry, with separate discussions to be held on sulphuric acid production, nitric acid and nitrogen fertilizers, and phosphoric acid and related fertilizers.

The organizers expect that technical papers to be presented will deal with problems that were not covered at the ECE Seminar on the Chemical Industry and the Environment, held

at Warsaw in 1973, or the ECE Seminar on Technical and Economic Aspects of the Fertilizer Industry, at Helsinki, in August, 1975. Participants will also deal with pollution problems caused by production of inorganic pigments, detergents and soda, and chlorine, and consider whether guidelines for the control of emissions should be drawn up.

The seminar will be opened with an introductory report by the ECE Secretariat, and the presentation of a paper by the International Labor Organization (ILO) on social aspects of air pollution in the inorganic chemical industry.

### Neglect of Land in Kenya Slows Output of Electricity

Neglect of land conservation in some parts of Kenya has created serious problems for the government-owned East African Power and Lighting Company, resulting in a reduction of its output of hydroelectric generating capacity.

The seriousness of the situation was brought home to Kenyans last month when regular cuts were ordered in electricity production. Many households in the Nairobi capital now lack electricity for four-hour periods on four days each week.

The company's chairman, Julius Gecau, has pointed out the urgency of new conservation measures to halt the silting of rivers, which is now reducing the amount of power from Kenya's hydro-electric stations.

He expressed concern at the indiscriminate destruction of water catchment facilities, such as forests, and the serious soil erosion now taking place. The soil erosion, he said, was resulting in a build up of silt in the reservoirs at a rate far higher than had been expected. As a result, the water level in these reservoirs has been dropping, reducing their generating capacity.

Gecau advocated stricter measures to prevent soil erosion—such as a revival of the conservation rules which were enforced in Kenya before the country became independent in

1963. In those days, he explained, farmers were compelled to terrace their land and were forbidden to cultivate along river banks.

### Argentina Restricts Fishing Of Hake and King Crab

Argentina has restricted commercial fishing in its southern waters to prevent overfishing of hake and king crab species.

In the Beagle and Moat canals off Argentina's southern tip, king crab fishing is allowed from June 1 through Aug. 30 of each year. Capture is prohibited during the remainder of the year except for local consumption. Regulations say capture can be done only by use of traps. Other methods are regarded as destructive to the species.

All fishing in Argentina's hake-rich southern Atlantic waters is prohibited each year from Oct. 1 to Dec. 31, spawning season of the hake. Completely prohibited is hake fishing for use in making fishmeal.

### Geneva Commission Urges New Rules for Watercourses

The International Law Commission that met at the Palais des Nations in Geneva this summer has found that a special study of pollution should be made in formulating new laws to govern the use of international watercourses.

This environmental factor was disclosed in the first report of the Commission's Special Rapporteur, Richard Kearney of the United States. He said that a watercourse is not intended to be used for waste disposal, much less contaminated with such poisons as arsenic and mercury.

He declared that the traditional description of an international watercourse is any river, canal, or lake forming the frontier or traversing the territories of two or more states. Said definition is substantially that which has been used to establish



rules governing river navigation, he pointed out.

Because political boundaries are irrelevant to the physical unity of a river system, Kearney stated that "it would seem appropriate for the Commission to concentrate upon uses of water at the outset and to consider the particular aspects of pollution in the context of specific uses, such as the heating of water in connection with atomic energy production, or the effects of chemical fertilizers upon aquatic life.

One of the key issues being debated was the meaning of sovereignty over a natural resource that is only within a government's borders on a transitory basis. In other words, does sovereignty give the state complete authority over the water—can it deprive the downstream riparians from any share of it or destroy its quality as usable water through pollution?

### Brazil Investigates Massive Tree Burning in Amazon

The Brazilian Forestry Institute (IBDF) is investigating accusations that a Volkswagen agro-industrial subsidiary has illegally burned 7.5 million trees in the Amazon jungle.

The accusations were made by Brazil's leading landscaper, Roberto Burle Marx, and the extent of the burn was apparently documented by the photos from the Skylab satellite, which is being used to check on burning activities.

The site of the big burn is in the Araguaya district in the south of Para State. Volkswagen do Brasil's subsidiary has illegally burned 7.4 S.A., is preparing the ground for the largest farming-ranching project in the Amazon area.

Company officials claim that the authorization to burn off the area was included in the permission to install their project, which was granted by SUDAM, the Amazon Region Development Department. However, IBDF, claiming that forest burning comes under its jurisdiction, has sent inspectors to the site. Ac-

ording to unofficial IBDF estimates the big burn area covers 23,000 acres and 7.4 million trees. If the size of the burned off area is confirmed and a court rules the action illegal, the company could be subject to a fine of up to \$4.5 million.

### Use of Icebergs to Irrigate Desert Studied in Chile

Chile is seriously studying the use of icebergs from its southern Antarctic regions to irrigate portions of the Atacama desert, considered one of the most arid spots on earth. "The corresponding investments would be enormous," said Fernando Silva at the U.N. special regional conference on water in Lima, "but it is not so impossible as it may seem."

Silva said that giant iceflows located along Chile's bitterly cold southern Pacific coast could feasibly be towed to Antofagasta, some 1,250 miles north, and melted in special processing plants, but he gave no estimate of cost nor what type of installation would be needed. Silva said the water would be used for irrigating rich, but arid, farmland near Chile's major northern port.

The Chilean delegate, one of some 100 experts representing some 30 nations and observer organizations, said that large ships could tow the icebergs north. The icebergs would be treated with special chemicals to prevent excessive melting enroute.

The delegate pointed out that the icebergs, being composed of fresh water and with nine-tenths of their volume located beneath the surface, make towing a practical operation.

### Prague Sets Stiff Fines For Building Violations

Prague's city government last month sharply increased fines for both construction organizations and individuals who violate building and environmental regulations.

Building organizations face fines as high as \$10,000 and private per-

sons can be fined \$2,000. The previous maximum—for both firms and individuals—was \$5.

The city has planned an extensive building program under the new five year plan (1976-80). Some \$600 million will be spent on new construction, which will be supervised by "building surveillance bodies of the National Committee." This supervision has actually existed for some years but from now on the supervisors will exercise more powers, according to a spokesman.

When the supervisors find deficiencies, they will have the right in extreme cases to halt project construction and in cases where the project is in conflict with the interests of society, will have the authority to order total demolition.

### British Conservationists To Buy Famous Bird Reserve

Minsmere, a famous European bird reserve on the coast of Suffolk in eastern England, is to be purchased freehold by the Royal Society for the Protection of Birds (RSPB) at a cost of \$420,000.

The RSPB has leased the site since 1948 and over the past 25 years has pioneered land management techniques which have attracted breeding, migrating, and wintering birds.

The British Government recognized Minsmere as a wetland of international importance when ratifying an International Convention on wetlands, known as the Ramsar Convention, earlier this year. Minsmere has provided the chief shelter in Britain for several rare or threatened breeding birds, including the avocet, bittern, bearded tit, and the marsh harrier.

The RSPB, Britain's largest voluntary conservationist body, is confident that the purchase price can be raised through its current "Save A Place For Birds" public appeal. The purchase takes place during European Wetlands Year.



## Import of Toys With Lead Paint Halted by Finland

Finnish Customs officials have halted the import of five tons of toy wooden building blocks from the Soviet Union after finding excessive amounts of soluble poisonous lead in their paint. The blocks must be destroyed or returned, according to Finnish regulations.

A spokesman for the customs laboratory said any painted toy that contains one per cent or more lead is banned in Finland. The regulations have been used to stop about 17 per cent of toys shipped to the country. The five-ton Soviet shipment was by far the largest shipment rejected.

## Argentina To Build Natural Gas Pipeline Underwater

The Inter-American Development Bank (IDB) has approved a \$87 million loan to build an underwater natural gas pipeline connecting Tierra del Fuego deposits to the Argentine mainland.

Tierra del Fuego natural gas re-

serves are estimated at 35 million cubic meters, about 18 percent of the nation's known reserves. The 28-mile long pipeline will be laid underneath the Straits of Magellan and be part of a 121-mile pipeline system connecting Argentina's southern natural gas reserves.

Argentina has some of the world's richest natural gas reserves. Natural gas is used extensively in urban areas, especially in Buenos Aires where about one-third of the 25 million population lives, as an inexpensive source of home cooking and heating fuel.

Once the southern deposits are connected to the main processing plant, Argentina will be able to produce up to 10 million cubic meters of natural gas a day to meet growing urban demands.

## Urban Garbage to Fertilize Arid Farmlands in Mexico

Using urban garbage to fertilize farmlands is under study by students at the University of Puebla in Puebla, Mexico. Those involved with the

study at the university's Sanitary Engineering Laboratory hope garbage can be decayed into natural fertilizer for arid lands. Mexican cities spend an estimated \$136 million annually collecting 7.3 million tons of trash.

## Bayer Co. in Munich Halts Production of Trichlorophenol

The Bayer Company has announced in Munich that it is suspending production of a chemical compound that has caused serious contamination in the Seveso, Italy, area, following a leak from a plant owned and operated by another firm. (*WER*, Aug. 30, p. 1).

The announcement stated that Bayer felt its process was completely safe, but that nevertheless its plant at Leverkusen will halt production of trichlorophenol while the Italian case is being investigated. Cela-Merck, the only other firm producing the compound in this country, said it does not plan to halt production because all necessary precautions had been taken.

## Calendar...

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 27-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.

**November 9-11**—Fifth International Pollution Engineering Congress. Anaheim, California. Contact: Clapp & Poliak, Inc., New York City.

**November 14-19**—International Symposium on Industrial Wastes and Environment. Caracas. Auspices of International Association of Medicine and Biology of Environment.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva, WHO.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva, WHO.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.

**December 13-17**—Working Party on Housing (6th Session). Geneva. ECE.

**December 20-23**—International Conference on Bicycle/Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.



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# World Environment Report

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# World Environment Report

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## Proposed Italian Legislation Would Limit Building Temperature

ROME—A new bill will soon be debated in the Italian parliament that will limit to 68 F. (20C.) the air temperature of living quarters in winter. The bill would also require heating plants in new buildings to be equipped with automatic controls to keep this temperature from being exceeded. A second bill would require that all mechanical and electrical components of new heating plants be officially approved.

Purpose of the two bills is to save imported fuel oil and to cut down air pollution. In 1973, Italy burned 18 million tons of fuel for space heating. The government estimates the new restrictions would cut this by 20 per cent and save \$300 million in foreign exchange.

The temperature limits will be imposed in public buildings during the coming winter. The legislative proposal would require automatic temperature control in new buildings by the end of 1977; fines up to \$16,000 are provided for violations.

Last winter, air pollution levels were reduced in Italy because the high oil prices meant less fuel was burned for transportation, and the weather was unusually mild, therefore reducing the space heating load. A further reduction is expected from the new laws and from an expected increase in the use of natural gas instead of liquid fuels for heating and transportation.

Italy's first air pollution law at the national level was a 1966 measure that restricted the sulphur content of fuel oil. The limit was 1.1 per cent sulphur for light fuel oil and 4 per cent for heavier oil used in industrial burners of more than 1 million Kcal per hour capacity. Exceptions were allowed for home stoves of less than 30,000 Kcal per hour and in communities smaller than 70,000 inhabitants.

This law was not enforced for five years because the necessary rules and regulations were not decreed until 1970. But most existing heating plants were adapted to low-sulphur oil by the early 1970's.

The 1966 law also called for control of industrial atmospheric emissions and motor vehicle emissions. Reduction in industrial emissions has been achieved through control devices and process modification, but no progress has been made on vehicle emissions. The European Economic Community is recommending to its

members, of which Italy is one, that they encourage a changeover to diesel engines for passenger cars. An EEC report says the diesel is 30 per cent more efficient than the gasoline engine, thus reducing fuel consumption, and that its emissions of pollutants are substantially less. However, no manufacturer is ready to mass produce a diesel for automobiles. VITTORIO PESCIALLO

## French President Blocks High-Rise Construction in Paris

PARIS—French President Valery Giscard d'Estaing late last month vetoed plans for a 528-foot office tower that was to have been built at the Porte d'Italie in Paris.

The action, according to an Elysee Palace spokesman, was taken to defend the Paris skyline and to battle against "gigantism" in urban areas. The planned skyscraper was to be called "Apogee" and it would have offered 312,000 square meters of new office space. The spokesman said that new, more modest plans might now be substituted.

The action was Giscard's fifth veto of massive construction projects in the capital. He has repeatedly declared that he wants cities to be more human, more social and airy and green, and he stressed concern for the environment in his campaign pledges.

In June of 1974, one of Giscard's first actions as President was to kill plans for an express highway along the Seine's west bank that would have funneled heavy traffic directly across from Notre Dame. Because the project had been a pet of his predecessor, Georges Pompidou, and work was already underway, the veto was a shocker.

Next, Giscard stepped in to save the Cite Fleurie, a

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building of 29 artists' studios in a green park in the 13th arrondissement. A builder had proposed replacing it with a higher, more-profitable building.

When Paris decided to move its famous and historic central markets, Les Halles, out near Orly Airport, plans were approved for an International Commerce Center in place of the market's stalls. This center would have been directly across from the Saint Eustache Church. But in August, 1974, Giscard rejected the project and demanded instead that the market area be converted into green space.

The French President's fourth such move came during early construction of a series of huge skyscrapers—both offices and apartments—in the area of La Defense, across the Seine from Neuilly. Plans called for buildings faced with reflecting colored glass that would have blocked the perspective westward from the Champs Elysee and the Etoile. Giscard forced a revision of the plans to break up the mirrored masses and leave gaps between the buildings.

These decisions have been considered politically courageous because they have been attacked by investors, the strong Left, which is concerned with employment for construction workers, and by the powerful Gaullist party within Giscard's own coalition, which fears "economic stagnation." WILLIAM G. MAHONEY

## U.S. and Japan Sign an Agreement On Environmental Cooperation

WASHINGTON—Secretary of State Henry Kissinger and Japanese Foreign Minister Kiichi Miyazawa early this month signed an agreement calling for cooperation in the field of environmental protection.

The agreement calls for cooperative activities in nine project areas: photochemical smog, meteorology, automobile pollution, solid waste management, sewage treatment, health effects, management of bottom sediments containing toxic pollutants, environmental impact assessment, and identification and control of toxic substances.

Japanese and American co-chairmen have already been named for all these areas, and work has begun in some of them. A conference is planned for October in Cincinnati on sewage treatment technology, and one in November in Tokyo covering photochemical smog and air-pollution-related meteorology.

The agreement calls for cooperation between the two countries in the form of meetings, particularly between working-level experts, visits and exchanges of scientists and other experts, joint projects and exchange of data. Also called for is a joint planning and coordination committee to meet once a year, at the ministerial level where appropriate.

Term of the pact is five years, and it may be extended by mutual agreement.

## FAO Helps Colombia Study Its Reforestation Problems

BOGOTA—The UN's Food and Agriculture Organization (FAO) and the Colombian wildlife service INDERENA agreed last month to undertake a \$683,000 study of Colombia's tropical forest along the Pacific Coast from Choco State on the Panamanian frontier to Tumaco in the south.

Five international experts will work with the Colombians to determine the best species for reforestation, based on commercial demand and ability to thrive in the Pacific environment. Three reforestation centers will be located at Sautata, Bajo Calima, near Colombia's Pacific port of Buenaventura, and Tumaco, with tree nurseries to serve local lumber firms.

Although the government has underwritten reforestation projects since the 1920's, the rate of destruction has outpaced replanting. According to conservative estimates, some 2.5 million acres of forest are destroyed by lumber companies and colonists every year. Peasant and large landowner alike still use the hack-and-burn method to clear land. In Choco State, for example, the price for clearing (burning) 2.5 acres of forest is only \$60.

INDERENA hopes to stem this devastation, when Colombia's sweeping new ecological code (*WER*, Feb. 17, p.5) goes into effect with complementary laws governing all aspects of the environment. INDERENA representatives are now working with officials of the Finance Ministry on a series of tax incentives to encourage industry to invest in reforestation schemes.

The wildlife service is also working with FAO on laws detailing the new code's sections on fishing, national parks and water resources. An ecological ombudsman is being proposed at the level of an attorney general to serve as the code's legal watchdog and to prosecute its offenders.

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## Indonesia: Migration Into Its Cities Adds to Environment Woes

No environmental problem is a greater challenge to the Indonesian government than the steadily growing migration of people from rural to urban areas. Industrialization has not reached the point where it causes serious pollution; even in the active petroleum sector, adequate precautions are being taken to protect the environment.

But the problems of urbanization related to the quality of life—poverty, illiteracy, malnutrition, poor housing, health care and sanitation—are already urgent in Indonesia and promise to become even more so in the near future.

The island of Java is the center of these problems. Although Indonesia as a whole has ample land to accommodate its 129 million population, 64 per cent of this population (82 million) lives on Java, which has only 6.9 per cent of the land area.

**Surabaya Crowding**—The population of Surabaya, for example, in eastern Java, once a sleepy backwater town, will reach six million within 20 years, according to H.M. Mochtadi, head of the city's master planning team, and already has over 2 million inhabitants. Mochtadi said that 70 per cent of existing houses in Surabaya are in polluted conditions—lack of septic tanks and toilets, clogged sewer lines, are just the beginning. Rapid development, especially in the western part of the city, is adding problems faster than they can be solved.

The basic difficulty is that with Java now having one of the highest population densities of any island in the world—over 1,500 persons per square mile—pressure on the land is so great that people can no longer earn a living in rural areas and must flee to the cities for work.

The rate of urbanization has increased markedly in recent years. A recent survey showed that 42.5 per cent of the migrants in Jakarta (also in Java) arrived within the past five years.

Indonesian Minister of State for Research, Dr. Sumitro Djojohadikusumo summed it up this way: "the problem of overcrowding will weigh heavily on such metropolitan centers as Jakarta and Surabaya. One can expect that in the coming decades Indonesia's urban population growth will exceed overall population growth to the order of 6 to 7 per cent a year."

That would mean a population density on Java of 3,200 per square mile by the year 2000. Java would become a totally urbanized island, which could touch off a chain of environmental disasters, such as denuded forests, soil erosion and widespread pollution.

**Jakarta Slums**—An estimated 70 per cent of Jakarta's six million people lives in "kampung", or slums, and a high proportion of these people are migrants from rural areas, especially in Java. Living is bleak, with ramshackle housing, poor or no sanitation, health care or

education, and inadequate diets. And yet the flow of people continues at an official rate of 1,500 per month, probably underrated.

The city government in Jakarta, with backing from the national government and loans from the World Bank, has been trying to improve the kampung through a program initiated as part of the country's First Five-Year Plan in 1969. Through April of this year, the program—which includes improvement of sidewalks, streets, bridges, sewers, electrical supply, traffic facilities, water services, public health centers and public toilets—has been extended through 3,340 hectares of slum area with a population of 1.69 million at a cost of \$30 million. In the current Second Five-Year Plan, another 4,800 hectares are scheduled with a population of 1.8 million.

But these are only stop-gap measures, with the continuing in-migration making it a two-step-forward, one-step-back proposition. Soetjipto Wirosardjono, head of the Urban and Environmental Research Center in Jakarta says "a sound follow-up policy (to kampung improvement) still has to be formulated if the ultimate goal of improving the quality of the environment for the whole city is to be achieved."

ARTHUR MILLER

## High Lead Levels Are Found In Lebanese Fishing Waters

**BEIRUT**—Concern is mounting over increasing pollution of the sea near this city. A recent test showed lead levels of 5 to 10 parts per million beyond 1 km from shore; closer to shore, particularly around the port area, concentrations were 10 to 30 ppm.

These results alarmed authorities here because of the possibility of concentration through the food chain in marine organisms. Therefore, a survey was conducted in important Beirut fishing areas and concentrations of lead in the water ranging from less than 2 to 30 ppm were found. These results mean that marine life, including fish, may be seriously affected, authorities believe.

Principle sources of the lead in the sea water are believed to be the burning of wastes at seashore dumps and the exhaust from motor vehicles being washed out to sea. Lebanon has one of the highest concentrations of automobiles per capita in the world—one to every eight persons—with two thirds of these (300,000) in Beirut alone.

Lebanese authorities working on the problem point out that the lead concentrations are highest in the most heavily fished waters. Therefore, they say, the fishing areas should be extended further along the coast and out to sea. But this solution will require aid to fishermen in the form of modern boats and equipment.



## Little Money Is Available for India's Environment Program

**NEW DELHI**—India's pollution control programs are proceeding extremely slowly, according to recent reports. Only 14 of 21 states have even begun to enforce a water pollution act passed last year by Parliament. The 1974-75 budget of the National Committee on Environmental Planning and Coordination (NCEPC) was raised only \$110,000 over the previous year to a total of \$360,000, far short of an effective level.

But what research NCEPC has been able to do has been worthwhile. For example, it challenged West Bengal industrialists who claimed pollution controls would cost too much. NCEPC put the actual cost at only 0.4 per cent of invested capital.

Principal force behind the NCEPC effort is its chairman, Dr. B.D. Nagchaudhuri, vice chancellor of Jawaharal Nehru University and a noted physicist. He also challenged industrialists' claims that they could not buy control devices made in India and would therefore have to use precious foreign exchange. One government company, Instrumentation, Ltd. of Rajasthan, is already producing such equipment, he points out.

Despite the enormity of India's pollution problems, Dr. Nagchaydhuri says that only five industries need costly controls. They are pulp and paper, fertilizers, distilleries, steel and petrochemicals.

The primary concern today is river pollution. India's fish catch is declining sharply.

One measure being proposed is that new industrial plants be required to show they have built in pollution control systems before they are granted production licenses. Another measure is a bill pending before Parliament to establish air pollution controls.

But without more funds for research and enforcement, the pollution control program in India is expected to take a long time in achieving any substantial impact.

## Greece Seeks Energy Independence By Exploiting Its Lignite

**ATHENS**—Greek officials are studying the possibility that full exploitation of the country's huge deposits of lignite (brown coal) could enable it to become independent of expensive imported oil.

Estimated at 1.4 billion tons, the lignite deposits are in central and southern Greece and they currently account for 44 per cent of the country's electric generating needs. But according to Constantine Konofagos, Minister of Industry, "if processed well they could progressively become the sole source of energy for the coming 40 years."

Greece now imports all its petroleum, 22.5 per cent of which is used to generate electricity, representing 41

per cent of the requirements. The remaining 15 per cent is produced in hydroelectric developments.

The present annual production of lignite is 15 million tons. One ton of oil is equivalent to seven tons of lignite, Konofagos said the target for lignite production by 1990 is 28 million tons.

Part of Greece's energy needs are also expected to be filled from petroleum deposits discovered two years ago in the northern Aegean Sea. Production is scheduled to begin in 1978 by Oceanic Oil Exploration Co. of Denver. Initial output is expected to be 20,000 barrels per day, which is expected to rise to 50,000 bpd by 1981. Greece's daily consumption of oil is 140,000 barrels. The petroleum deposits are expected to last 17 years.

Konofagos said steps for full exploitation of the lignite are underway, and the search for new deposits has so far been highly satisfactory. Greek energy requirements will rise from 14 billion kwh in 1973, he said, to 17.1 billion by 1977. By then, 17 per cent will be supplied by oil, 65 per cent by lignite and 18 per cent by hydro. But by 1982, he went on, oil will account for less than 10 per cent of the demand, and will be progressively replaced by lignite.

Konofagos said that about \$70 will be saved for every ton of oil replaced by lignite, which costs \$3.3 per ton. The minister added that the large deposits of lignite "permit us to postpone taking a definite decision on the construction of a nuclear unit." KYRIACOS CONDOULIS

## Pakistan Studies Water Problem

**ISLAMABAD, Pakistan**—It will take \$2 billion to eliminate waterlogging and salinity problems from all the irrigated lands of Pakistan, according to Chaudhri Altaf Husain, Chief Engineering Advisor to the government and Secretary of the Board for Waterlogging and Salinity Control. This is nearly 20 per cent of the annual Gross National Product.

Of the total canal-irrigated area of 20.5 million acres, 639,000 are "heavily waterlogged," with a water table from zero to five feet below the surface.

Pakistan has already spent \$60 million in a program that began last year in which 400 to 500 tubewells have been sunk and 200 miles of canals have been built to drain out the salt water. Top priority is being given to the Northwest Frontier Province area, where more than 90,000 out of 959,000 acres of sugar cane and tobacco land are badly waterlogged. In the Punjab, 144,000 out of over 4 million acres are affected; in Sind Province 293,000 out of 14 million are affected.

Pakistan has the world's biggest canal-irrigated system, and experts are now questioning whether fresh water supplies are adequate to supply it. The UN Development Program has just committed \$3 million to prepare a comprehensive action program to deal with this whole question.



## Special Report: Ireland's Waters Are Threatened by Pollution

**DUBLIN**—Agricultural operations and town sewage are the main polluters of water in Ireland, according to a national study released late last month by the semi-official agency, the Institute for Industrial Research and Standards.

The report was published simultaneously with another study by the semi-official planning agency, An Foras Forbartha, which says that eight of the country's best known lakes are severely polluted and five more are on the danger list. Both studies are under review by the government.

The Industrial Research agency reports that industrial discharges and town sewage each account for 40 per cent of the country's water pollution, with agricultural activity accounting for the balance. But over 90 per cent of the industry involved is based on agriculture.

The report also says that air and water pollution by industry would be largely eliminated if older industries were obliged to meet the same standards applied to new ones. Standards for new industries are established by Ireland's Industrial Development Authority (*WER*, March 3, p.3).

The Institute's examination of 23 industry sectors shows that fruit and vegetable processing accounts for 40 per cent of industrial waste discharged to inland waters. None of the sugar beet operations in particular are considered to have adequate pollution controls.

The institute's report shows that 35 stretches of river are polluted, with industrial effluent and sewage again being the problem. In 13 of the 22 cases where industry is at fault, the discharges originate in milk, meat or vegetable operations.

Polluted lakes are almost exclusively confined to Cavan, Monaghan, Longford and Westmeath counties, with agricultural run-off and pig slurry from breeding operations the most-often cited sources. Meat processing, pulp and paper, brewing and fish meal are also criticised.

Dublin Bay receives 25 per cent of the entire national effluent discharge, but it has a high assimilative capacity, according to the report.

**Air Pollution**—In Ireland as a whole, the institute reports, the air is twice as clean as that in Britain, which in turn compares favorably with many other parts of Europe. The main air pollution problems occur in central Dublin.

The nation's Electricity Supply Generating Board is blamed as the biggest air polluter, contributing

about 104,000 of the 264,000 tons per year of sulphur dioxide produced in the country. Winter smoke levels in Dublin are beyond desirable levels because of fuel burned for space heating. At four monitoring stations along the Liffey, pollution levels exceed World Health Organization criteria on occasions during the winter.

**Lake Pollution**—The An Foras Forbartha lake survey involved 53 lakes and took 11 months. The report does not go into the causes of pollution, which apparently are to be left to a further survey.

The lakes found polluted to the extent where fish life is gravely threatened are Lough Egish, Lough Muckno, Lough Sillan, Lough Oughter, Lough Ramor, Lough Ennell, Lough Sheelin and Lough Kinale. The five found in danger are Carrowmore Lake, Lough Derg, Garadice Lake, Templehouse Lake and Lough Gowna.

Justin Keating, Ireland's Minister for Industry and Commerce, on receiving the reports, conceded that environmental legislation in Ireland is not good enough and he agreed that when the reports had been studied in more detail some sort of time limit should be set for polluters to clean up or face the consequences.

While there is not specific pollution control legislation involving his department, he added, considerable leverage is available through various industrial grant schemes.

Keating said the existence of serious pollution problems related to older industries and town sewage reflects Ireland's impoverished past.

**Citizen Protest**—Meanwhile, residents of County Dublin are banding together to protest pollution of the sea and its estuaries in their region. The action is organized by the Swords Community Council and includes towns in which most of those who commute to Dublin live.

Council leaders claim that pollution has reached enormous proportions and they are angry that a number of schemes to improve sewage disposal have been shelved. The Department of Local Government explains that financial allocations have had to be cut back because of the economic decline.

Community leaders are particularly annoyed that planning permission is still being given for hundreds of new houses in the area while the sanitary system is not adequate for the existing population.

TOM MacSWEENEY



## Briefs . . .

### Work Proceeds on International Toxic Chemical Register

A task force on the International Register of Potentially Toxic Chemicals (IRPTC) (*WER*, Feb. 3, p.8) met earlier this month at the Nairobi headquarters of the UN Environment Programme (UNEP). The team consisted of 13 scientists from 11 countries and its purpose was to develop detailed plans for establishing the IRPTC.

The IRPTC is intended to collect material and make available information on environmentally significant characteristics of chemical substances. It is conceived as an international clearing house for information on potentially toxic substances.

Under a decision of UNEP's Governing Council, the IRPTC will be established as a "programme activity center," which will, on an experimental basis, manage specific program activities through UNEP.

### Water Supply for Cancun Resort

A water purification plant capable of pumping 5,000 gallons per minute has been started up in the new Mexican resort city of Cancun on the Yucatan Peninsula. Initial output will be half that amount.

Cancun, a city created by joint federal and private capital had only 12 residents in 1970. Today's census of permanent residents is 20,000, with 34,000 expected by 1980. Eleven hotels already offer 1,642 rooms, and nine more due for completion this year will add almost 700 more.

### China Boosts Pollution Control

China is promoting the prevention of pollution by urging workers to make local, do-it-yourself solutions to industrial waste problems. One example being promoted in the

Chinese press this summer is the Foochow Phosphate Fertilizer Plant in Fukien Province. Opened in 1965 without pollution controls, the plant emitted contaminated waste water and exhausts containing fluorine. After the Cultural Revolution, workers built a dust collector, which uses a water wash, and added a waste water purification system. All this was done on their own, according to the press reports. Today, the plant purifies some 4,000 to 5,000 tons of water per day.

Fukien Province, on China's east coast, has established a special environmental protection agency within the provincial industrial department. The agency has its own appropriations and can call on experts from various research institutes. All new factories and mines are required to take "strict measures" against pollution.

### Ibero-American Ecology Unit

The Spanish government is expected to propose creation of an Ibero-American ecological institute during an October meeting of environment specialists from Latin America and Spain in Madrid. The institute would be located in Spain and would offer interdisciplinary courses related to the environment for Latin American ecologists at the Master's level.

### UN Study Finds High Pollution In Latin American Cities

Mexico City is the dustiest city in Latin America and, along with Sao Paulo, Rio de Janeiro, Buenos Aires and Havana, has particulate loading in its air above levels that are safe for humans, according to a report issued last month by the World Health Organization.

Urban transit is possibly the "most serious" contamination problem facing these cities, the study says, but other factors include abuse of commercial advertising,

destruction of vegetation, competition for space and habitual traffic congestion.

Noise levels in parts of Mexico City, Caracas and the Brazilian cities are above safe human tolerance, the report adds.

All of these conditions create a fertile ground for "spontaneous violence," which the report says is often manifested in the affected cities in the aggressive behavior of motorists.

### Sri Lanka Tries to Halt Illegal Traffic in Leopard Skins

Sri Lanka's Wildlife Department, with the help of the Wildlife and Nature Protection Society, a local conservation group, is attempting to crack down on illegal but lucrative trafficking in leopard skins.

The agency believes a number of foreign residents, many of whom are experts loaned to Sri Lanka under technical assistance programs, are shooting leopards in the jungles of the dry zone using high velocity rifles, searchlights and other modern hunting paraphernalia, or are buying skins from village poachers.

Once the skins are procured, spiriting them out to western markets is relatively easy. Sometimes tourists are used as innocent couriers, unaware they are violating Sri Lanka's Wildlife Protection Ordinance. The local price of a skin is \$50 to \$150, an excellent price for a village hunter, but a good skin will bring \$1,500 to \$3,000 in Europe.

The Wildlife and Nature Protection Society is attempting to arouse public opinion against poaching, and the Wildlife Department is attempting to tighten controls. Last month, a provincial magistrate imposed a fine of nearly \$2,000 on a group of poachers, an unusually high penalty. But the judge observed that the department's enforcement staff is woefully inadequate. Sri Lanka conservationists hope that rising public opinion and stiffer punishment will at least reduce the slaughter.



### French Inaugurate Industrial Waste Disposal Center

The French Minister for the Quality of Life, Andre Jarrot, last month inaugurated a new center at Limay (Yvelines) near Paris for the neutralization and disposal of industrial wastes.

Constructed by the Societe d'Assainissement Rational et de Pompage (SARP), a branch of the Compagnie Generale des Eaux, the new plant is to neutralize products (acids, oils, solvents, paints) that might endanger drinking water supplies.

The first units opened include an analytical laboratory, several neutralizing chains, an incineration system, and a unit to solidify sediment. Initial capacity is 45,000 tons per year, and when the center is completed it will be able to handle 150,000 tons of wastes per year, making it the largest such installation in France. Industries using the center will bear the major part of its cost.

### Canada Seeks Assurances on South Korea Nuclear Plant

South Korea has agreed to Canadian demands for strict assurances to prevent misuse of nuclear power plants it is buying. A bilateral agreement is expected to be signed by the end of this year. South Korea cleared one hurdle by signing the Non-proliferation Treaty this spring.

Canada agreed last year to sell South Korea a CANDU (natural uranium) reactor and to grant or guarantee \$560 million in loans. After India exploded an underground bomb, Canada sought new assurances that South Korea would not use its reactors for any such purpose.

The Korea plant will be sited at Raari in North Kyongsang Province about 180 miles south east of Seoul on the coast. Two other potential sites—at Asan Bay on the west

coast and Naepori on the east—were shelved. Construction was to have started last year but was delayed by problems over funding South Korea's domestic share of the cost, \$250 million, and by site selection problems. The nuclear plant, South Korea's third, will have a 600 MW capacity.

A controversy has developed over whether France has agreed to sell South Korea a fuel reprocessing plant capable of producing plutonium. Canadian officials say they understand a small plant will be obtained for study purposes. Reprocessing is now the prerogative of only a few countries (U.S., France and Great Britain) and the worry is that the plutonium could be used for nuclear bombs. By signing the NPT, South Korea has pledged not to do so.

### Brazilian Ecology Course

Brazil's first postgraduate ecology course gets underway this year at the Federal University of Minas Gerais in Belo Horizonte. Eight students are already enrolled, and initial plans call for a two-year course with five compulsory subjects and ten options. The course will lead to both Masters and Ph.D. degrees.

### Huge Water Project in Sao Paulo

An \$850 million water supply and sanitation plan for Sao Paulo, Brazil, was announced last month. First part of the project will be a \$225 million water system for which the contracts are already signed. The project will bring tap water to about 300,000 households in the Greater Sao Paulo area (the city and 37 neighboring municipalities), or about 1.5 million people. Today it is estimated that 37 per cent of the area's 9.4 million people have no running water or other sanitary facilities and use water from wells and streams. This water is often contaminated and is blamed for high

infant mortality rates. New reservoirs will be built, and the output of the public water supply system will be increased from 330,000 gallons per minute to 500,000. First stage of the water project is expected to take 18 months and to bring water to 80,000 homes.

The city is negotiating a \$625 million loan for next year from Brazil's National Housing Bank for major sanitation projects.

### Coffee Growers Subsidize Bogota's Trolley Buses

The Colombian Federation of Coffee Growers has agreed to help finance the purchase of 200 trolley buses at a cost of \$8.4 million to reduce traffic and air pollution problems in Bogota.

The trolley buses will form part of a fleet owned by the capital's District Enterprise of Urban Transport. The enterprise already has 100 trolley buses, but most of them are seven years old and in poor condition.

The coffee growers are also underwriting construction of five new electric substations and the expansion of five existing ones.

The trolley buses will be concentrated in low-income suburbs currently served by regular buses and will help eliminate exhaust emissions and noise, increase transport capacity and reduce fuel imports. The project is scheduled for completion by 1977. It is one of several public service projects supported by the semi-autonomous coffee federation, which markets most of the country's coffee.

### Brazil's Reforestation Program

The Brazilian Institute of Forestry Development has announced a campaign to enforce federal laws requiring reforestation of areas cut down by commercial enterprises.

Beginning next year, the institute's inspectors will attempt to en-



sure that 30 per cent of the cut areas will be replanted with trees that are native to the region and valuable, commercially or otherwise. These trees include pine, rosewood, ivory-wood, copaiba, imbuí and others. In 1977 the percentage of these trees planted is to increase to 50, and to 100 per cent in 1978.

### France Builds Environment Group

French President Valéry Giscard d'Estaing late last month signed a decree reforming the High Committee for Environment, enlarging both its membership and its powers. Giscard promised during his election campaign to create a "National Eco-

logical Council." The committee's enlargement, from nine to 20 members, will in effect fulfill this pledge, according to a spokesman for Giscard.

The reform will allow certain administrative services, such as the National Office for Forests and the National Institute of Statistics to be represented on the committee, as well as other groups concerned with the environment. Seven seats on the enlarged committee will be held by representatives of national agencies, and the remaining 13 will be divided among scientists and academic experts.

The High Committee's responsibilities are to give advice on large projects of national interest, to make suggestions on environmental matters to the government, to keep

the public informed and to make an annual report on problems of the environment and quality of life.

### Sumatran Rhino Near Extinction

The Sumatran rhinoceros—the only kind known to have double horns—is nearly extinct. Only 30 to 50 head are believed to survive, according to Swiss biologist Marcus Borner, who recently studied the animals in Indonesia.

According to Borner, the only hope of preventing complete extinction lies in the wildlife preserve at Gunning Leuser in North Sumatra, where shelter is already being given to tigers and orangutans. Rhino horn is prized as a virility medicine.

## Calendar . . .

**September**—Workshop in Population Resources and Environment in West Africa, Senegal, sponsored by Council for the Development of Economic and Social Research in Africa.

**September 1-6**—Seminar on Collection, Disposal, Treatment and Recycling of Solid Waste, sponsored by Economic Commission of Europe, Hamburg.

**September 2-4**—Committee on Water Problems. Geneva, sponsored by Economic Commission on Europe.

**September 7-19**—Twelfth General Assembly and Thirteenth Technical Meeting, Kinshasa, Zaire, International Union for Conservation of Nature.

**September 8-13**—Symposium and Workshops on Application of Mathematical Models in Hydrology and Water Resources Systems. Bratislava. Sponsored by World Meteorological Organization.

**September 9-12**—Workshop on Hydrocarbons in the Marine Environment. Aberdeen, Scotland. Sponsored by International Council for Exploration of the Sea.

**September 11-12**—Pollution Control Costs in the Iron and Steel Industry. Paris. Sponsored by Organization for Economic Cooperation and Development (OECD).

**September 14-19**—International Conference on Environmental Sensing and Assessment, Las Vegas, sponsored by the University of Nevada, US Environmental Protection Agency, World Health Organization and others. Contact Office of Public Affairs, National Environmental Research Center, US EPA, P.O. Box 15027, Las Vegas.

**September 15-16**—Pollution Control Costs in the Primary Aluminum Industry. Paris. Sponsored by OECD.

**September 22-26**—Symposium on Forest and Wood, Inter-laken, Switzerland, sponsored by the Economic Commission for Europe (ECE) and the Food and Agriculture Organization (FAO).

**September 22-October 1**—International Workshop in Environmental Education and Training. Belgrade. Sponsored by UNESCO.

**September 29-October 8**—International Council for the Exploration of the Sea. Montreal.

**October 9**—Steering Group for the International Survey of Information Required for the Assessment of Potential Effects of Chemicals on the Environment. Paris. Sponsored by OECD.

**October 13-16**—Symposium on Planning and Developing the Tourist Industry in the ECE Region. Dubrovnik. Sponsored by Economic Commission for Europe.

**October 19-23**—Limits to Growth '75. Houston. Sponsored by The Club of Rome, University of Houston and Mitchell Energy & Development Corp.

**November 3-7**—Design Criteria for Urban Water Supply Systems. Geneva. Sponsored by World Health Organization.

**November 3-7**—International Symposium on Biological Effects of Low-Level Radiation on Man and His Environment. Chicago. Sponsored by the International Atomic Energy Agency.

**November 4-7**—International Symposium on Industrial Toxicology. Lucknow, India. Sponsored by the Industrial Toxicology Research Center.

**November 10-20**—Desulphurization of Fuels and Combustion Gases. Washington, Sponsored by Economic Commission for Europe.





# World Environment Report

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AUGUST 4, 1975

## Denmark Earmarks \$17.5 Million For Environment Subsidies

**COPENHAGEN**—A new Danish law providing financial support for environmental protection projects went into effect on July 15.

It provides a subsidy of up to 50 per cent for projects that cost \$8,700 or more, with a maximum subsidy for any single project of \$1.7 million.

To back up the plan the government has set aside \$17.5 million. Firms wishing to receive a subsidy must first apply to local officials and then be approved by the national Environment Council. To be eligible, projects must be started before April 1, 1976 and completed before April 1, 1977. A spokesman for the Environment Ministry said it is hoped all applications will be received and approved by November.

The law provides that projects undertaken must create new jobs for the unemployed. And, if the project will create increased earning capacity for the firm, the subsidy will be reduced accordingly.

Although Denmark subscribes to the "polluter pays" principle of the European Common Market, of which it is a member, the ministry spokesman said the temporary departure from the principle is justified by the country's high unemployment rate.

The subsidy program was recommended by a governmental commission that calculated 1,500 jobs could be created by a program to disburse \$55 million on environmental cleanup projects via loans, investment rebates or direct grants over a three-year period (*WER*, June 23, p. 3).

## Major Ocean Dumping Program Begins Off Irish Coast

**CORK, Ireland**—Ireland has permitted the first dumping under license of chemical wastes off its coast. The operation is the largest yet off the British Isles.

The dumping scheme was developed after extensive study as the best solution to the waste disposal problems of a Pfizer Chemical Company plant at Ringak-

siddy on Cork Harbor, which makes citric acid from beet molasses.

Pfizer has been dumping a daily effluent of 30,000 lb. of biochemical oxygen demand (BOD) directly into the harbor and has permission to dump up to 100,000 lb. However, the company applied to dump 300,000 lb. of BOD per day, equivalent to a population of 2.4 million (total population of the Irish Republic is less than 4 million). This application generated strong local opposition and brought the company into confrontation with An Taisce, the Irish National Conservation Protection Group, and the application was refused.

Pfizer considered building a \$2.9 million pipeline to carry the effluent out to sea, but the ship dumping operation was chosen as a cheaper solution. It was approved by the government after studies by marine scientists and biologists.

In the dumping program, Pfizer disposes of 400 tons of liquid effluent per day under a license granted by the Department of Agriculture and Fisheries. The liquid is taken out to sea by two dredgers in several daily trips. The dumping must be done at least 15 miles off the coast and it must be independently monitored at Pfizer's expense. The license permits the company to dump up to 190,000 lb of BOD daily.

For Pfizer, this program means that it can continue to expand its Ringaksiddy operation unimpeded. Company scientists are nevertheless examining ways to produce citric acid from raw materials cheaper than sugar beets and are seeking ways to recycle the wastes.

Conservation groups and local authorities are also satisfied with the program because it takes pressure off Cork Harbor. The Irish government is considering how ocean dumping might be used for waste disposal from other industries, towns and cities. TOM MacSWEENEY

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## New French Law Tells Producers To Clean Up All Wastes

**PARIS**—France has adopted a new national environment law that places the responsibility for elimination of all wastes on the producers.

The definition of what may be considered as wastes is so sweeping as to encompass practically any residue from consumption and production. It reads: "all residue from a process of production, transformation or use, all substances, materials, products, or more generally all abandoned goods." And "all persons who produce or cause wastes...that produce damaging effects upon the fauna, flora, earth, or degrade sites or countryside, pollute the air or water, cause noise or odors, and in a general manner damage the well-being of man and the environment, are responsible for assuring the elimination of these."

The new law provides for creation of a national agency "of an industrial and commercial nature" charged with providing funds and loans for elimination and recovery of wastes.

## IAEA Sees Big Nuclear Growth

**VIENNA**—The more than four-fold increase in the price of fossil fuels means a sharpening competitive advantage of nuclear power over other sources of energy for generating electricity, according to the International Atomic Energy Agency's (IAEA) annual report for 1974-75 released last month.

In almost every situation where a power station even as small as 100 MW is needed, the nuclear option will have to be considered, the report says. Total nuclear power capacity throughout the world was 16,300 MW in 1970. By the end of 1975 it will be almost 82,000 MW, and by 1980 it is expected to be over 220,000 MW, according to IAEA.

The report points out that 108 states have signed the Non-Proliferation Treaty and that 93 non-nuclear-weapon states have ratified it. This means that nuclear power capacity in non-weapon states is now about 24,000 MW in 15 countries, almost 100 per cent of which is under IAEA safeguards. By 1980, it is expected that about 100,000 MW will be reached in 22 non-weapon states.

The target for IAEA's general fund, which is used to support its technical assistance activities, was raised from \$3 million in 1974 to \$4.5 million in 1975, and IAEA's Board has recommended a further increase to \$5.5 million in 1976.

The number of large-scale projects the agency is executing for the UN Development Programme increased from 15 in mid-1974 to 19 in mid-1975.

## Greek Government Attacked for Inaction on Environment

**ATHENS**—Pressure continues on the Greek government to take drastic measures against the country's increasing environmental problems.

Opposition deputies charged last month that the government is showing an unjustified reluctance to deal with these problems and that the lack of a specific program makes the situation worse.

Stephanos Papatheodoru, an opposition deputy, during debate in parliament cited the unchecked automobile exhausts in the big cities, the increase in radioactivity in rivers flowing into Greece from neighboring countries, the poisoning of fish by mercury in industrial wastes, the extensive use of agricultural chemicals and the uncontrolled operation of industries.

He praised the inclusion of environmental protection in the new constitution (*WER*, June 9, p. 6), but urged passage of specific laws to protect Greece from further destruction. He stressed the need for an independent, high-level environment agency.

Papatheodoru called on the government to force industries to control pollution, suggested a special tax on those which do not and proposed a plan for constructing industrial zones outside big cities.

In reply, Minister of Culture and Sciences Constantine Trypanis said the government is aware of the problem but the issues are complex. He pointed out that Premier Caramanlis asked for a special committee to examine the situation and that experts from Canada and Great Britain have been invited to join. "The premier expects this committee to take specific decisions on the further handling of environmental issues," Trypanis said.

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## Special Report: Kuwait's Water Program Seeks To Make Desert Bloom

**KUWAIT**—This tiny country is a desert state—one of the hottest, driest inhabited places on earth. It has no lakes or rivers; its summer daytime temperatures hover around 120°F in the shade. Its annual rainfall rarely rises above five inches, and the rain that does fall pours down and dissipates quickly.

Yet, without outside help, Kuwait is able to meet the water demands of a population that has doubled in the last decade to almost 900,000 and of an oil-based industrial and commercial society with a GNP of over \$4 billion per year.

It does this largely by using the only water resource it possesses in abundance—the sea.

Kuwait's first desalination unit, a multi-effect, submersible distillation system, went into operation in 1950 at Kuwait Oil Company's (KOC) refinery to supply fresh water for its operations and for the township of Ahmadi. Three years later a second submersible plant was commissioned at the main electrical power plant in Shuwaikh, the city's northern seafront industrial area. This one produced one million imperial gal. per day. A similar unit followed two years later.

In 1958, KOC installed a flash evaporation unit, now believed the world's oldest, to supply 300,000 gpd.

As the oil industry boomed, so did water demand. In 1954, fresh water consumption was 980,000 gpd; by 1965 it was 4.25 million.

By 1965, the Electricity and Power Ministry was scrapping the obsolete Shuwaikh units and switching over to multi-stage flash evaporation. By 1970, the ministry had commissioned 13 of these units, producing 18 million gpd. KOC added two more units to bring its output up to 1.5 million gpd.

But fresh water demand was rising rapidly. In 1970 it stood at 20 million gpd, a 20-fold increase in 15 years. Further large-scale desalination was needed. In 1964, work began on a 531-MW power station at the industrial and refining complex of Shuaiba. This plant, which combines Japanese, French and German equipment, includes five multi-stage flash units, commissioned in 1972, with a total capacity of 22 million gpd of fresh water.

Today, Kuwait's desalination plants have a total capacity of more than 50 million gpd, and they are fueled by natural gas from KOC's oil fields.

In addition to desalination, Kuwait has been tapping the massive ground water table that extends from eastern Saudi Arabia, through Kuwait, and south to Bahrain, as well as another field near the northern border with Iraq.

**High Cost**—The cost of all this development has

been enormous—a total bill of \$330 million by 1974. Critics suggest it would have been cheaper to lay a fresh water pipeline from the Shatt Al-Arab, the Tigris and Euphrates estuary in Iraq. Costs of piped water have been estimated at 25¢ per 1,000 gallons, compared with desalination costs of more than \$3 per 1,000 gal.

But Kuwait's Minister of Electricity and Water, Abdalla Yousef Al-Ghanem, maintains that estimated costs of piped water have risen, that Iraq's diversions have reduced the water available, that expensive treatment plants would be required, and that Kuwait should not rely on another country for its water supply.

**Storage**—Kuwait has a storage capacity of 70 million gal. of fresh water and the reserve is never allowed to fall below 25 million gal. These tanks also serve to put the taste back into the desalinated water. Authorities try to maintain the mineral content of their potable water at 700 to 800 ppm.

In a real emergency, Kuwait can fall back on about 120 million gal. capacity in household water tanks.

**Future Plans**—The Ministry of Electricity and Water is planning a new 7-million-gpd desalination plant at Shuwaikh, further extensions at Shuaiba, and a new 600-MW power plant.

The ministry is also conducting research at its Shuwaikh Water Resources Development Center in a joint program with UN experts into faster, cheaper and more efficient methods of desalination. The techniques range from flash distillation to reverse osmosis and ionic separation, along with solar energy stills.

The development center is producing a future generation of Kuwaiti desalination experts—70 to 80 graduates per year—whose skills are expected to be in demand throughout the world. There is also a reciprocal arrangement with Glasgow University in Scotland.

Kuwait has big plans for developing its ground water resources, including turning its deserts into farm lands. With the Shakaya fields expected to produce 70 million gpd of brackish water, with water-bearing structures in Wafra in the south and elsewhere marked for exploitation, plans are already underway for planting a huge belt of forests around the country and for extensive desert cultivation.

Abdulla Abdul Mehsen Al-Sharhan, chief engineer for water and gas, points to Shakaya as the potentially perfect desert farming center. "As water is taken from the wells, the flash rainstorms of winter

*(continued on p. 8)*



## OECD Roundup: Controlling Smog and Traffic; the Cost of Pollution

**PARIS**—The Organization for Economic Cooperation and Development (OECD) continues its significant activities in environmental areas (*WER*, June 23, p. 5). Following is a roundup of current developments.

**Photochemical Smog**—OECD will soon publish a report on the efforts of three member countries—Australia, Japan and the US—to combat photochemical smog. This initial study will be extended to Canada and Europe by OECD's Air Management Sector Group of the Environment Directorate.

Photochemical smog is a matter of at least potential concern to virtually all OECD member countries, the report says. Nearly 86 per cent of the global consumption of energy occurs in the band between 30 and 60 degrees north, it points out, and the meteorological parameters favorable to oxidant formation (and hence smog)—such as atmospheric stability, plentiful sunshine and low wind speeds—occur periodically in most of this region.

Oxidant abatement policies in the countries studied are aimed at reducing concentrations to the point where they are acceptable from the standpoints of health and environmental protection. Costs to the communities are a significant portion of the total cost of pollution abatement, according to the OECD study.

Estimates of oxidant control in the US are not broken down specifically, but the report estimates total expenditures in the US in 1972 on air pollution control as greater than \$250 million, or 0.02 per cent of GNP.

In Japan, cost of the oxidant abatement policy to the national government in 1972 was about \$12 million, or 0.003 per cent of GNP.

Little information on abatement costs was available for Australia, according to the report, but annual costs for achieving vehicle emissions reductions were estimated at nearly \$40 million for 1974, with the amount rising in successive years.

The OECD report notes two basic techniques for abating hydrocarbons, a key ingredient of the photochemical reaction—redesign or modification of existing vehicles through lower compression ratios, spark retardation, leaner fuel mixtures and the like, and installation of insulated and heat-resistant exhaust manifolds and catalytic converters on new vehicles.

Other methods include: Partial substitution of public transport for private cars in urban areas; application of exhaust control devices on uncontrolled light-duty vehicles; planning of freeways and traffic control systems to minimize stop-and-go driving.

Long-range planning options include emergency action to reduce vehicle emissions when weather conditions create a potential air pollution incident; government certification of inspection and maintenance personnel.

"It is clear that control of oxidant precursors cannot

be isolated from the other demands on society, economics and technology," the OECD report concludes. "Resource management and energy conservation in particular are likely to affect the type of industry and vehicles that will be used in the future. Oxidant abatement strategies will have to be developed that take account of these changes."

**Traffic Controls**—In a related work OECD surveyed 300 cities with populations over 100,000 and concluded that "towns are better with less traffic, so long as adequate provision is made for the mobility of workers and residents and the distribution of goods."

The survey is backed up by case studies of seven cities: Besançon in France, Bologna, Munich, Nagoya in Japan, Nottingham in England, Singapore and Uppsala in Sweden.

The survey shows that municipalities formerly relying on parking management and pedestrian areas for traffic control are increasingly complementing these techniques with bus priorities and other measures to improve public transport.

Nagoya, for example, has 62 km of bus lanes, while both Uppsala and Besançon have bus-only streets to allow public transport access to city centers that are banned to cars. Nagoya also protects residential areas from through traffic by means of "No Entry" signs, one-way systems and pedestrian streets.

These techniques basically redistribute traffic, but other cities are developing traffic reduction techniques. Nottingham uses traffic signals to limit the flow and number of cars entering the center city. Singapore has a system of supplementary licensing to limit center city access (see *WER*, July 21, p.1 for details).

The Nottingham technique, the OECD survey notes, imposes the penalty of time, falling equally on all motorists, while the Singapore approach applies a cost penalty, thus affecting poorer drivers the most.

In all cases studied, limits on car use were accompanied by measures to improve mobility by other means. Both Nottingham and Besançon introduced new bus service linking car parks with commercial centers. Bologna eliminated public transport fares during rush hours. Besançon and Munich introduced a "para-transit" system involving shared taxis instead of buses during evenings and weekends. Elsewhere, experiments are being conducted with dial-a-ride services that take people from door to door, as well as with car-pool schemes.

The corrective measures stress low cost. The steps taken in Nagoya to protect residents from through traffic work out to about \$30,000 per sq. km., and the city's entire four-year program for reducing traffic and improving public transport is costing only \$28.8 million.

At Besançon, the cost of extensive pedestrian areas,

(Continued on next page)



a diversionary traffic route ringing the city center, new buses and a bus depot is only \$7.7 million. At Uppsala, \$119,083 has been spent on traffic management, and Nottingham is spending \$217,000 on improved bus service.

**Environmental Cost**— OECD's Environmental Directorate has concluded that to establish the real costs of environmental protection, economists must consider not only the costs of pollution control equipment, but also the costs to society of not taking clean-up action.

Any evaluation of environmental damage, according to the Directorate must begin with a quantification of physical or psychic effects—i.e., how many people are disturbed by a given noise level or suffer from respiratory disease at a given level of atmospheric pollution. The Directorate calls these "non-monetary damage functions."

The Directorate notes that environmental damage is extremely varied—a highway causes atmospheric pollution, water pollution (from run-off), esthetic damage and ecological damage. The problem is how to compare these different forms of damage and relate them to the costs of control measures.

The answer, according to the Directorate, is to make a monetary estimate of the damage, i.e., to calculate its cost to the community.

This estimate will permit selection of the alternative

which is least harmful to the environment and will allow a cost-benefit analysis of control measures. It is no more desirable in many cases to "depollute" completely, the Directorate report notes, than to allow unbridled pollution.

Economic estimates can also be used to establish environmental standards with maximum benefit to the community and, if necessary to fix the charges levied on pollutant emissions to attain these norms. The monetary estimate would be particularly useful where compensation for damages is to be calculated.

The Directorate defines "monetary damage" as "the sum of money required to compensate people who have suffered from a given environmental hazard." To estimate it, the report states, experts should distinguish between financial loss and loss of amenity. Financial loss means expenditure due to degradation of the environment. Loss of amenities—the intangible or "psychological cost"—includes all forms of non-financial loss such as pain and suffering, esthetic offense, noise, reduced recreational facilities, etc.

The Directorate finds that current environmental policies are still often based on purely qualitative and not very reliable data.

"Decision making would be improved," the report says, "if we had a more thorough and accurate knowledge of non-monetary functions and could make better estimates of the monetary functions."

WILLIAM MAHONEY

## El Salvador Tries To Protect Environment During Development

*SAN SALVADOR, El Salvador*—Rampant population growth, land shortage, climatic conditions and urgent socio-economic demands are forcing this small, predominantly agricultural nation in tropical Central America to confront the need to conserve its natural resources and to protect its environment.

Both government and private sectors are attempting to deal with key environmental issues and define them to the public through campaigns in the mass media.

The government passed the first forestry law in Central America in 1973, making soil conservation and reforestation major concerns of the government.

Promotion of tourism has also helped create public awareness of environmental issues and stimulate support for cleaning up beaches and parks. New public markets have replaced former street selling centers as part of the drive to tidy up the city of San Salvador.

A National Ecological Committee was created to provide public schools with conservation education programs that emphasize preservation of national flora and fauna and control of pollution.

Government conservation programs are established in the Department of Agriculture and Livestock, with projects budgeted at \$1.2 million under the control of a

young engineer, Joaquin Guevara Moran. He told *World Environment Report* that El Salvador's program is the first such in Central America.

Most ambitious of the country's environmental programs is the national park system. Four new parks have been designated and now await legislation setting their final limits. A balsam forest, a tropical rain forest, a lush volcano region and a river estuary will be developed for park recreation, education and scientific study.

In attempting to transform itself from a primitive agricultural economy to a modern industrial state El Salvador has embarked on a massive program of industrialization and a land reform plan it hopes will create more jobs, develop technology and increase the productivity of its lands.

The government has passed no pollution control legislation aimed at industry, nor is it likely to do so. But there has been a conscious effort by both government and the private sector to avoid heavy industries that could create pollution problems. The newly formed Foreign Trade Institute has appealed internationally for new light industries that do not pollute.

El Salvador's continuing dependence on agriculture for food and foreign exchange means that the use of pesticides and chemical fertilizers is considered vital. There has been little attention to the possible harmful effects of sprays on fruits and vegetables.

MARY LOU KOESSLER



## Briefs . . . .

### Industry/Environment Center Appoints New Chief

Charles A. Cochrane, a British scientist and engineer, has been appointed chief executive of the International Center for Industry and the Environment (ICIE) at the Centre's Second Annual Meeting in London last month.

ICIE was established after the 1972 Stockholm environment conference and began operations in January 1974. It is headquartered in Nairobi and maintains a European liaison office in Paris. The organization's purpose is to provide a direct channel of communication between the industrial groups that make up its membership and the UN Environment Programme.

ICIE has 20 member organizations covering a range of national industrial and commercial bodies and international organizations representing specific industries.

Cochrane was until recently head of the Division of Natural Resource and Pollution Control at the OECD Environment Directorate in Paris.

### France Moves To Protect Its Mediterranean Coast

The French government is taking steps to strengthen the protection of its Mediterranean coastal regions from uncontrolled land development.

The government has extended the life (to 1980) and reinforced the powers of the Interministerial Mission for the Protection and Improvement of Mediterranean Nature Areas (until now referred to in the French press as "Mission Impossible" because of its lack of enforcement powers). The mission is specifically charged with protecting three regions — Provence-Cote d'Azur, Languedoc-Rousillon and Corsica—and its main responsibilities are coordinating control of the forest fires that sweep the dry re-

gions each year and preventing activities that could cause environmental damage to the coastal areas.

Real estate operators have been the mission's main problem in its three years of existence, and it has sought to control intrusion by these operators into areas of natural beauty.

Industry has also been a problem for the mission. For example, shipyards at La Ciotat are planning to expand into what has been one of the most beautiful sites in southern France. The mission is opposing this expansion but without the support of the municipality because the shipyards are the major industry and source of employment.

### French Firm Signs "Depollution Contract" with Government

The huge Pechiney-Ugine-Kuhlmann (PUK) industrial complex signed a "depollution contract" with the French government's Ministry for the Quality of Life on July 23.

A ministry spokesman called the contract "only a first step" because it covers only two groups within PUK that account for only about 15 per cent of the complex's total business. Negotiations continue on a "framework contract" that would include all PUK components. The accord fixes a seven-year investment plan "to eliminate pollution caused by already existing plants." The total amount of this investment has not yet been determined.

### Liberian Flood Control

Liberia's Ministry of Public Works has begun to remove all structures in the capital city of Monrovia that are built in the city's 100-foot canal right-of-way. The action is an emergency measure aimed at preventing the floods usually experienced during the rainy season. A heavy downpour in June caused floods that made 10,000 people

homeless. According to studies made by Public Works engineers, the floods are directly attributable to houses constructed in the canal area which obstruct normal flow of water to the sea.

### Hong Kong Ponders Nuclear Power

The government of Hong Kong is expected to decide by September whether or not to proceed with a full-scale feasibility study on building a nuclear power plant. The decision will be made after a preliminary study by two experts from the International Atomic Energy Agency (IAEA) is turned over to the government.

The IAEA study is intended to determine Hong Kong's energy requirements for the next 20 years and to weigh nuclear vs. conventional fuels.

If the go-ahead is given for the full-scale study, speculation is that the \$300,000 to \$1 million contract is likely to go to a US consulting firm. The US is considered the front runner because of its advanced nuclear technology and ability to complete the study in a short time.

### Eleven Countries Assign UNEP Representatives

Eleven countries have already assigned permanent representatives to the UN Environment Programme under the Headquarters agreement signed by UNEP and the government of Kenya earlier this year (*WER*, April 28, p.6). The countries whose representatives have presented credentials to Maurice Strong, UNEP's executive director, are Spain, the US, West Germany, Italy, Sweden, Sudan, Pakistan, Australia, Switzerland, Finland and Japan.

Strong told *World Environment Report* that a large number of other countries have also indicated their intention to appoint permanent representatives. He added that he



hopes all countries with a strong interest in the environment will follow suit, particularly those of UNEP's Governing Council.

Many of the representatives already appointed have direct experience and knowledge of environmental affairs, Strong pointed out. He expects this will greatly facilitate UNEP's work.

#### Infrared Devices Scan French Rivers for Pollution

The French government is using the aerial infrared scanning technique to detect river pollution. A first experimental flight was conducted July 11 by a National Geographic Institute plane equipped with scanner gear.

The scanner registers the areas beneath it like a motion picture camera, picking up infrared radiations that allow temperature readings within tenths of a degree. The findings are recorded on magnetic tape.

Among the discoveries so far is that the waters of the Marne River are colder than the Seine. When the rivers join, the streams do not merge but the Marne current continues to flow beneath the warmer Seine.

Authorities say the scanner would be the ideal instrument to monitor thermal discharges by industries and also by nuclear power centers, a subject of widespread controversy in France.

#### Colombia Urged to Protect Its Forest Resources

The Colombian government should create a national forest fund, extend tax credits to encourage tree planting and establish a system of tariff incentives to encourage domestic development of wood products now imported. These are the major recommendations emerging from a series of meetings attended by Colombian forestry experts, representatives of the Food and

Agriculture Organization (FAO) and the Brazilian Institute of Forest Development.

The recommendations were made by the Inter-American Center for Agricultural Sciences to the Colombian ministries of agriculture and finance, the planning institute and the wildlife service, INDERENA.

Today, some 225 concessionaires are exploiting Colombia's forest reserves in 6.4 million acres on the north and south Pacific coasts, the Amazon and Orinoco jungles and the Guajira Peninsula in the northeast.

#### Denmark Studies Noisy Boats

Denmark's Environment Minister, Helge Nielsen, has ordered a study of ways to control excessive noise from private pleasure boats. The basis for such control is contained in the national law for protection of the environment.

A working group will study application of controls through speed limits in certain areas and through licensing of motor vehicles.

In some seaside resorts, the police have already decreed speed limits at defined distances from shore to protect swimmers and reduce noise. The ministry wants to set common standards for the whole country.

#### Electric Car Prototypes

Several prototype electric cars are expected to be publicly presented by the end of 1975, as engineers at Mexico's National Center of Industrial Technical Education respond to a deadline set by President Luis Echeverria.

The most successful model built thus far is along the lines of a Renault station wagon powered by a zinc-air battery. Engineers Julio A. Cortes and Marcio Rivas, directors of the project, say the vehicle is more efficient than similar prototypes in Europe, the US or Japan.

Various prototypes with power

and range greater than cars developed elsewhere will be unveiled by late December, Cortes and Rivas claim. Next step will be granting contracts for mass production, they add.

#### Solar Plant for Mexico

A solar electric generating plant, believed to be first of its kind in the world, will be operating before the year's end in the central Mexican state of Guanajuato, according to the head of the government's environmental improvement agency, Francisco Vizcaino Murray.

Located at San Luis de la Paz, the plant will produce electricity through a turbine, which will be used to pump ground water to arid and semi-arid areas serving a population of 10,000. The solar energy plant is a joint Mexican-French effort through the French Society for Thermal Studies and Solar Energy, and the Mexican Special Solar Energy Program, "Tonatiuh." It will be capable of operating up to 1,000 water pumps.

#### Mexico City Authorities Act To Increase Green Space

Property owners along a 10-km stretch of Insurgentes Avenue, which crosses Mexico City, have been told they must create a five-meter "green strip" on the front of their lots or face fines up to \$800.

Homes, businesses, offices and tourist facilities line the route. City authorities say owners may use trees, flowers or plants to embellish the zone and help combat air and visual pollution.

In a nearby neighborhood, a fine of \$1,200 has been authorized against anyone destroying a tree without a prior governmental approval. The neighborhood includes Chapultepec Park, the official Presidential residence, military hospitals, the race track and many foreign embassies and embassy residences.



## World Bank Loans

Among recent loans by the International Bank for Reconstruction and Development (World Bank) were the following related to environmental areas:

The bank's affiliate, the International Development Association (IDA), has extended a \$57 million credit to India to support rural electrification schemes, with emphasis on energizing minor irrigation wells.

A \$2-million credit will help finance a resettlement and technical assistance project in Senegal in which 6,000 persons will settle in nine new and several existing villages.

A \$40 million loan goes to help build 90 km of highway sections in the Slovenia, Serbia and Montenegro sections of Yugoslavia.

A \$95-million loan will help Thailand finance the 97,000-hectare Phitsanulok Irrigation Project on the west bank of the Nan River in the country's northern region.

## Brazil Studies Solar Potential

The Brazilian government is considering creating a National Program for the Use of Solar Energy. The announcement came after a meeting between Shigeaki Ueki, Brazil's Minister of Energy, and the French Ambassador to Brazil, Michel Legendre. France is one of the most advanced countries in solar energy, and the Brazilians were

sounding out the ambassador on possible information exchange. Negotiations are also said to be underway with the US and Israel.

Tropical Brazil has a tremendous potential for solar power development, but so far there is only a small, \$2-million experiment underway.

## Pakistan Rails May Run On LNG

The Pakistan Council for Scientific and Industrial Research (PCSIR) is studying the technical and economic feasibility of producing liquefied natural gas (LNG) to operate the country's railway system. The purpose is to reduce pollution and to reduce Pakistan's reliance on imported diesel fuels.

According to the PCSIR, the government-owned railways now consume \$31.5 million worth of oil per year. A LNG plant of 1,200 tons per day capacity would meet these needs and save a significant amount of foreign exchange. PCSIR has contacted a number of foreign firms engaged in research in this field.

## Debate Over Dublin Bay Refinery

A confrontation between environmental groups, local residents and developers backed by the trade unions, is taking place over a proposed oil refinery on Dublin Bay.

The Dublin Corporation, the local planning authority, has refused

permission for a group called Aquarius Securities to build the \$144-million refinery, but the group has appealed to the Irish Minister for Local Government, who has power to over rule the corporation. The Minister has set a public hearing for the appeal.

The planning corporation is attempting to frustrate the construction plans by declaring the whole bay an "amenity area." This action follows a ten-year campaign by the Dublin Bay Preservation Society, a group led by a man who had his name legally changed to Sean "Dublin Bay" Loftus.

The corporation's action has been attacked by trade unions, who claim the refinery would mean hundreds of jobs, and by the Dublin Harbor Authority, which controls port and shipping movements but has no planning powers.

## Uncut Roadside Grass Makes Habitat for British Wildlife

Britain's Department of the Environment will stop cutting grass on the edges of trunk roads and motorways except where required for the safety of drivers or pedestrians. Local authorities are being asked to follow suit.

The Department expects to save up to \$2.4 million per year this way. The new policy is being supported by conservation groups, who wish to see a more-varied habitat for the wildlife which is known to flourish along the motorways in less-populated areas.

## Kuwait Water (continued from p. 3)

replace much of it, preventing salt water encroachment as the well is exploited."

At Rawdetain, the ministry has set up a recharge system in which the flash rainfall can percolate through gravel beds into the aquifer. The possibility of pumping excess from the distillation plants during the offpeak wintertime into the wells is also under study.

Kuwait experts are keeping in mind the pitfalls of

tampering with nature. Each summer, powdery dust blows in from the former marshlands of Iraq that dried up when the Euphrates was dammed. Iraq in turn suffers from Syria's Euphrates diversions which caused the salinity of the Shatt Al-Arab to rise considerably.

But for a state that has known only blistering sun, sand and salt water, the promise of a fertile Kuwait is as tempting as the "gushing fountains and flowing springs" of the eternal garden itself.

MUSA DAJANY





# World Environment Report

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## American Appointed To Head United Nations Environment Fund

**NEW YORK**—Bruce Stedman, assistant administrator of the UN Development Program (UNDP) has been appointed to succeed Paul Berthoud as assistant executive director of the Environment Fund and management for the UN Environment Programme (UNEP). Berthoud is rejoining the UN Conference on Trade and Development (UNCTAD) in Geneva (*WER*, May 26, p. 1).

In another development, Dr. Mostafa Tolba, UNEP's deputy executive director, will take over direction of the agency's Bureau of the Programme in addition to his present responsibilities. Dr. Robert Frosch, who now heads the bureau, is leaving to take a post at the Woods Hole Oceanographic Institution.

Stedman, 54, who has been with the UN for 29 years, will become UNEP's highest ranking American when he reports to Nairobi in September. He has already served in Kenya where he was UNDP's resident representative for five years. Before joining UNDP in 1953 he held various administrative posts at UN headquarters. He is an anthropology and sociology graduate from Harvard. Stedman told *World Environment Report* he is "delighted to be joining UNEP, which is becoming one of the most important agencies in the United Nations system."

In other UNEP staff changes, Philip Ndegwa (Kenya) will become director of Programme Division III (Economic and Social Programmes) in addition to his duties as senior economic advisor. Vincente Sanchez (Chile), now director of Division III, will become UNEP's regional representative for Latin America, stationed in Mexico City. Anastase Diamantidis (Greece) will be deputy regional representative.

Canaganayan Suriyakumaran (Sri Lanka) will become regional representative for Asia and the Pacific, stationed in Bangkok. Eric Carlson (USA), will become head of the new section of human settlements within Programme Division III.

Adrian Phillips will head the unit for program coordination in the Bureau of the Programme and will be succeeded as secretary to the management committee by David Lambo. Albert Khazoom will head the unit to coordinate the regional representatives and liaison offi-

ces. Azzam El-Faruqi and Georgette Pancrazi will be assigned to the Environment Fund.

Recruitment is to begin immediately for the advisory teams which are to be established in the regional offices.

## Common Market Considers Standard For Atmospheric Lead Levels

**BRUSSELS**—the European Common Market's executive commission has asked member states to approve a pair of proposals to establish standards and monitoring programs for lead pollution.

The first proposal lays down the maximum atmospheric concentrations of lead in urban residential areas and for areas particularly exposed to automotive traffic to be adopted by the member states by 1980. Regular air sampling would be conducted to assure compliance.

The second proposal would establish blood level standards for the general population. Again the levels would be determined by regular sampling and passed along to the commission.

The commission has sent previous lead control proposals to the EEC Council of Ministers, some of which have already been adopted. These include standards for surface waters used for drinking purposes, food additives and animal fodder. A proposal for limiting lead in gasoline has not been enacted. The Commission is preparing other standards for drinking water, ceramics, paints and varnishes, and toys.

Individual member countries have also enacted national lead control measures. West Germany, for example, has begun charging higher tax on leaded gasoline to discourage its use.

*(Continued on next page)*

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In introducing the newest proposals, the commission's experts observed that EEC consumption of lead is more than one million tons annually and that some uses cause considerable atmospheric pollution. Among the uses cited are gasoline additives, electric batteries, paints, varnishes, enamels, plastics, ceramics, printing, pipes and some insecticides.

In 1972, the commission sponsored a major international symposium on lead pollution, out of which came the proposed limits on lead in gasoline.

## Peru Enacts Sweeping New Law To Protect Its Jungle Regions

*LIMA, Peru*—The Peruvian government has passed its long-awaited Forestry and Wildlife Law, which gives the state exclusive control of all economic activities in the Amazon Region.

The law decrees that all forest areas are public property to be administered by the Ministry of Agriculture. It is designed to combat indiscriminate exploitation of Peru's renewable resources by private individuals.

Previous laws protecting jungle animal species remain in force, as do laws protecting certain species of jungle flora.

The law defines three categories of forest lands that will be administered exclusively by the government: (1) National Forests, in which the government will establish state enterprises to exploit forest resources; (2) Protected Forests, which will be areas set aside to conserve agricultural lands, waters, etc., in populated zones; (3) Units of Conservation, which will be set aside specifically to protect forests and wildlife from exploitation.

In a fourth category, Forests of Free Disposition, non-state enterprises will be granted exploitation contracts. Preference will be given to "social property" or "public enterprises" which return part of their profits to the workers. Contracts will be renewable ten-year periods, they will cover no more than 100,000 hectares, and will be granted only on condition the companies follow reforestation and other guidelines established by the ministry.

Some individual contracts of 1,000 hectares will be granted to those who have traditionally hunted certain animals for food or who extract certain trees as their sole means of livelihood. Special hunting grounds will be set aside for exclusive use of indigenous Indian tribes.

Penalties for violations (which range from cutting down seedlings to destroying animal burrows) are stiff. A first violation carries a fine up to \$2,300, a second violation is up to nearly \$7,000, while a third will cancel a contract. A special force of Forest Police has been created to enforce the law, and will begin operations early next year.

The law provides for scientific studies of forest

regions, the acquisition of modern equipment and the training of forest personnel so that exploitation can be rationalized.

The amount of land in the jungle is immense, and its riches virtually unknown. A systematic exploration for petroleum is nearly complete, and although some reserves have been found, they are not considered very significant.

Prospects for future agriculture are poor because the thin forest soil and heavy rains do not support much in the way of cash crops. The highlands at the edge of the jungle are more important, and this narrow belt already supports a sizeable population of farmers who produce fruit and vegetables and raise livestock. The alti-plano and sierra regions have few forests and support mainly subsistence farming.

A new government program proposes to resettle some people in the jungle. A half million hectares have been set aside for the first of these projects with the intention of settling 21,000 families on plots of about 20 acres. Other projects of similar size await the outcome of the first.

Tract areas for the four categories of forest lands have not yet been made public, but the law states they will be announced sometime before the end of August this year.

No statements have yet been made on what sort of exploitation the state intends to undertake itself. But many Peruvian conservationists are lobbying in behalf of the unique wilderness aspects of the Amazon region. There are already 15 national parks in existence or planned, and the park at Manu in the southern Peruvian jungle is expected to be the largest national park on the South American continent.

JANE BERGER

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## Special Report: Politics, Costs Slow Italian Water Cleanup

**ROME**—Pollution of rivers and coastal waters is the major environmental problem in Italy. Among 8,000 Italian communities, including those on Sicily, Sardinia and the smaller islands, only 32 have waste treatment plants working in accordance with national laws and standards. And many industries discharge their wastes directly into municipal sewage systems.

As a result, untreated wastes from both large and small communities are carried by rivers into cultivated fields and sometimes into the ground water. Many wells have had to be separated from the municipal water supply systems in the industrial north. River pollution also poses a threat to fish life and human health.

Along the 6,800-km coastline, several areas where the big port cities discharge their wastes directly into the sea are seriously affected, with the impact spreading to nearby coastal resorts and shellfish banks.

**The Polluted North**—The worst polluted areas are in the northern Adriatic, where the sea is shallow with feeble currents. The Po River carries effluents from the industrialized and overpopulated regions of northern Italy into the Adriatic. During summer millions of tourists crowd the Adriatic beaches, further raising the level of contamination.

A national attack on the water pollution problem is hindered by the instability of the Italian government. Social problems are pushing the people toward the left, but the high cost of reform prevents the country from abandoning the traditional political center. Some estimates predict, for example, that if a concerted attack were mounted on the whole range of environmental and conservation problems, the rate of inflation would double over five years.

The instability of constantly changing cabinets disrupts any consistent approach to problems such as pollution, and government ministries often act without proper coordination among them. In the meantime, responsibility for major parts of the environment are being transferred to regional authorities.

The uncoordinated collection of pollution data adds to the problem. Last year the Italian Senate voted to have the government prepare a yearly report on the state of the environment, but no follow-up has been forthcoming. Earlier this year a new "Ministry for Cultural and Environmental Assets" was created, but the sole environmental responsibility of the minister is protection of the landscape.

The Minister for Scientific Research has no portfolio and lacks funds or personnel to prepare a report on the environment.

Last year TECNECO, a company partly financed by state money and having an international patronage, completed a three-volume analysis of the environmental situation, along with guidelines on what could be done. But although this report was based on information supplied by government ministries, it could not be presented to parliament because it was not the work of a state board. And the guidelines for action were lost in political bickering.

No general law for protection of the environment exists, and few judges are willing to stretch old non-specific laws to cover modern environmental disputes.

Other negative factors include the economic decline, the very slow passage through parliament of a proposed new specific law on waste water standards, a lack of skilled operators for treatment plants, and the necessity for periodic refinancing of public works projects as inflation eats away allotments.

Because of the economic decline, private industry is also trying to defer such non-productive expenditures as waste treatment processes. Public authorities have frequently given up trying to enforce environmental measures under threat of shutdown by the polluting plant. Politicians are forced to give priority to full employment in a period when large numbers of migrant workers are returning.

**Industry Programs**—But many big companies are continuing environmental programs they began several years ago when Italy was in a period of general promotion of pollution control. Italian industry announced plans to spend \$570 million in 1973 to 1975, and much of this spending is going forward, with exceptions.

Public agencies are also spending increasing sums on anti-pollution programs. In northern Italy, regional authorities are building more waste treatment plants, particularly in areas such as Tuscany, Liguria and Romagna, where the local economies depend heavily on tourism.

In southern Italy, a national agency—Cassa per il Mezzogiorno—is spending a great deal of public money to build waste treatment plants near large communities such as Naples and Bari and downstream from various smaller towns.

The Cassa was prodded into action by the national parliament after the 1973 cholera outbreak in several southern port towns.

But the annual spending on environment in Italy is still only around \$11 per capita (0.6 per cent of GNP), about the lowest of any major industrialized country.

*(continued next page)*



Italian Water (continued from page 3)

**Water Law**—The specific law on water supply practices and standards was introduced in parliament ten months ago, and the details are still being debated by various committees. The law would make water treatment compulsory when certain contamination levels are reached and would levy a new tax on water users.

Proceeds of the tax would go to help large communities or groups of smaller ones pay for developing and treating water supplies.

The new law would also establish a guideline for regional laws, under which regional authorities will have the responsibility for creating and controlling new water authorities. Several regions, mostly in the north, have already published their water laws. The national law would allow eight years to reach the new water standards.

VITTORIO PESCIALLO

## Germans Control Detergent Makeup

**BONN**—The West German Parliament has passed unanimously a new law controlling the composition of detergents that could become a model for the rest of Europe.

The law covers both the labelling and the phosphate content of detergents. It requires manufacturers to identify ingredients on their packages and to limit the amount of substances that are dangerous to the health and environment. The latter provision is aimed at phosphates. Phosphates must be replaced as soon as possible, and manufacturers must adjust the phosphate content according to regional water characteristics.

Although the law applies only in West Germany, other European officials are studying it carefully. The German law on biodegradability of detergents led the way for general adoption in the Common Market countries.

## Many Documents Already Available From WHO's Environment Program

**COPENHAGEN**—A ten-year program in environmental pollution control, a project of the European headquarters of the World Health Organization here, has passed the half-way point. Several documents and reports have already been completed and are available.

These include interim reports on water analysis, air management, solid waste management, noise control, non-ionizing radiation, and beach pollution. The documents are prepared in English, French and Russian and are available free. A complete list may be had by contacting the Regional Office for Europe, WHO, 8, Scherfigsvej, DK 2100 Copenhagen Ø, Denmark.

As part of the program, four British specialists have prepared an environmental pollution glossary in English covering air pollution, water pollution, ecology and solid waste. Definitions of some 6,000 terms have been sent out for review by experts in other countries after which work will begin on French and Russian versions.

The reports prepared so far will form the basis of a

series of manuals the regional office plans to publish in 1978-79. These manuals are expected to have worldwide application and to foster standardization of measurements and techniques in environmental pollution control.

Last month in Brussels a working group held the last in a series of meetings to review the draft documents for the manual on water pollution analysis, and another document on eutrophication.

Countries participating in the ten-year program include Albania, Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, German Democratic Republic, Federal Republic of Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Monaco, Morocco, the Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the USSR and Yugoslavia.

## Pollution is Damaging Antiquities

**ATHENS**—Pollution is doing serious damage to the antiquities on historic Acropolis hill here, according to Greek Minister of Culture and Sciences, Constantinos Trypanis.

The government has established a committee of experts to examine ways of preventing further damage to the 2,500 year old statues and buildings.

The Parthenon temple and other priceless structures have also suffered extensive damage from noise vibrations and the heels of millions of tourists. But according to Trypanis, the most serious damage is done by atmospheric pollution which has eroded the surface of the marble. He said that the Caryatids, the six statues of maidens holding up the Erechtheion temple near the Parthenon, have already changed color because of soot and other atmospheric pollutants.

The additional threat to the Acropolis monuments caused by noise and earth tremors from low flying aircraft was dealt with by banning flights in the area.

Tourists have been banned from walking in the Parthenon. But at present, no relief from the constant pollution is evident. The suggestion that the statues be removed to a museum has been rejected because it would deprive the monuments of historic significance.



## Brazilian Cites Delays In Latin American Water and Sewer Program

**RIO DE JANEIRO**—A leading Brazilian sanitary engineer has criticized Latin American countries for not carrying out water and sewage improvement plans they agreed on in 1972.

According to Jose Roberto de Rego Monteiro, president of the Interamerican Association of Sanitary Engineering, only Brazil, Colombia and Ecuador have done much to implement a detailed 15-year sanitation plan drafted at a meeting in Asuncion, Paraguay, three years ago.

Rego said Brazil is well along in fulfilling the plan and that both Colombia and Ecuador have completed some projects and carried out studies. Mexico and Venezuela are carrying out separate experiments, he added, and have departed from the Interamerican plan.

The 1972 plan aimed at providing adequate water and sewage services to as many as 320 million Latin Americans within 15 years. The countries were divided into three groupings:

1. Haiti, Paraguay, Bolivia, Guatemala and Peru,

which represent 19.2 per cent of the total population of the area. Less than 30 per cent of the population in these countries has adequate public sanitation.

2. Honduras, Ecuador, Dominican Republic, the eastern Caribbean, British Honduras, El Salvador, Nicaragua, Jamaica, Surinam, Brazil, Colombia, Chile and Argentina, with about 50 per cent of the population. In these countries, from 30 to 60 per cent of the people are served by public sanitary facilities.

3. Panama, Barbados, Guiana, Mexico, Trinidad and Tobago, Costa Rica, Uruguay and Venezuela, with the remaining 30 per cent of the population. From 60 to 100 per cent of the people in these countries have public sanitary service.

The estimated cost of the original plan was \$749 million for group one, \$4.5 billion for group two, and \$1.9 billion for group three.

Rego believes the plan is still valid but can no longer be carried out within the original schedule.

"But," he said, "not only local governments, but also the international banks and health organizations will have to show more interest in the plan."

Although Rego praised Brazil's performance, the state of Rio de Janeiro—where he made his remarks—is far behind schedule with several million inhabitants living without running water or sewers.

GEORGE HAWRYLYSHYN

## Bangladesh Water Pollution Called Close to "Environmental Disaster"

**DACCA**—Concern is mounting in Bangladesh over the country's water pollution problems, which are blamed for the high frequency of typhoid and Cholera and several large fish kills in the major rivers.

M.A. Karim, secretary of the country's water pollution control board, told *World Environment Report* the new nation is "close to environmental disaster" due to indiscriminate dumping of industrial wastes in the Buriganga, Sitalakhaya and Karnaphuli Rivers, and high coliform levels in these rivers near the major cities of Dacca, Chittagong and Narayanganj.

A recent test of the Buriganga near Dacca showed a coliform level of 20,000. Operators of this city's 101-year-old water treatment plant, which serves about a million people in the old section, are finding it increasingly difficult to purify the heavily polluted river water. Use of treatment chemicals has increased by 50 per cent in recent years.

A number of industries—paper, rayon, fertilizer,

jute, several hundred tanneries and three power plants—are discharging large amounts of waste and thermal pollution into the three rivers.

Worst polluters, according to government officials, are the Hazaribagh tanneries in Dacca, the Ghorasal fertilizer plant, the Karnaphuli paper complex in Chittagong, and the power plants.

High levels of ammonia and salts are found in the Buriganga near the tanneries, as well as chromium and arsenic, and the contaminants are also found in nearby drinking water wells. Oxygen content of the river water near the tanneries is virtually nil.

The paper complex is a source of sulphuric acid and black liquor, while the fertilizer plant discharges ammonia believed responsible for severe fish kills in the Sitalakhaya.

Last year the Bangladesh government introduced new water pollution legislation under which the major industries have been asked to build treatment facilities.

The new legislation also says that new industries may not be built without provision for waste treatment.

Various UN agencies, including the World Health Organization, the UN Development Program and the UN Environment Programme, have offered financial and technical help in studying and combating these water pollution problems.

TAHMINA SAEED



## Briefs...

### Most Cancers Are Linked To Environmental Factors

From 60 to 80 per cent of cancers are linked to environmental factors—particularly chemical ones, according to estimates released at a workshop just held in Brussels. The meeting was sponsored by the Commission of the European Economic Community and the World Health Organization's International Cancer Research Agency and drew experts from Europe, the US, Canada, Australia and Japan.

Purpose of the workshop was to exchange information on more rapid tests to predict delayed toxic effects of chemicals in the environment. A major problem in this field is that most cancer detection experiments take months or years. But officials at the Brussels workshop said significant progress has been made in the last two years in rapid identification techniques.

A second phase of this question will be discussed in Brussels in October when the European Institute of Cancerology and Ecology will host an international roundtable on the links between the disease and environment. The discussion will center on recent reports on how certain kinds of cancer are more prevalent in certain geographic locations.

### Finland Suspends Baltic Seal Hunt for Three Months

Hunting of grey and ringed seals in the Baltic Sea off Finland was suspended from early March through the end of May this year because of poor ice conditions. Normally both species may be killed the year around, but this year the ice, where the seals breed their young, froze very late and weak.

During recent years the popula-

tions of both species have declined sharply, but the Finnish government not only allows year-round hunting, it also pays a bounty for the seals. Annual catch is 1,000 to 2,000 seals.

In Sweden, the seals are protected during the first six months of the year, and Soviet regulations are even stricter.

Besides hunting, the seals are also endangered by increased traffic and noise in the Baltic, as well as by increased levels of such toxic chemicals as DDT, PCBs and mercury.

Finland's Ministry of Agriculture and Forestry is considering stopping the bounty system and instead paying compensation to fishermen who claim damages caused by the seals.

### Finnish Chemical Company Must Pay Heavy Damages

A Finnish chemical company has been slapped with severe penalties for polluting the sea near the towns of Uusikaupunki and Pori on the western coast of Finland.

Kemira Oy must pay \$426,000 in damages to fishermen and property owners in the area. The company is additionally obliged to formulate a plan to abate waste discharge into the sea by 1978. Kemira Oy must also pay for the breeding of 100,000 fish and a water protection fee of \$56,800.

### Australian Whaler Increases Sperm Whale Catch

Cheyne's Beach Whaling Co., Australia's only whaler since 1963, has steadily increased its annual sperm whale catch during the past 10 years.

The company's quota for this year is 1,397 whales up 300 from last year. There were 629 males and 450 females in last year's catch.

Virtually no female sperm whales were killed before 1972 because they were protected by a 10.7-meter size limit.

On the advice of the scientific

whaling committee of the International Whaling Commission, separate catch quotas were imposed on each sex in 1972, and the size limit was reduced to 9.14 meters. The commission had established an annual quota of 13,000 sperm whales in the Southern Hemisphere in an effort to prevent whale stocks from dropping below safe levels.

### Norway Prepares for North Sea Oil Spills

The Norwegian government has earmarked \$2.5 million for anti-pollution measures to cope with the expansion of offshore oil activities in the North Sea.

Under the program, anti-pollution equipment will be stored at key points along the coast. Two pumping units capable of emptying wrecked tankers have been ordered.

In addition, government officials are stressing that individual oil companies have a responsibility to try to prevent and be prepared to clean-up oil related pollution of the sea and coastline.

### Rabid Dogs Pose Threat In Mexico City

Millions of stray dogs present a real danger of rabies to the people of Mexico. Last year, in Mexico City alone, close to 50,000 persons were attacked by rabid dogs and underwent medical treatment, according to Dr. Jorge Vilchis Villasenor, director of epidemiology and sanitary campaigns for the national Social Security Administration.

He says that some nine million unvaccinated dogs roam the countryside. There are no records of the number of person who are bitten and die from rabies because they do not get medical help.

While the Social Security Administration lacks the funds for an all-out roundup of the stray animals, it does devote a large amount of money to keeping track of persons bit-



ten by rabid dogs, and making certain those persons undergo the full treatment of injections.

Dr. Vilchis told *World Environment Report* that efforts to exterminate the street dog population are fought strenuously by the Animal Protection Society.

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### World Bank Environment Loans

The World Bank has announced several loans for environment-related projects.

Nigeria will receive loans totalling \$65.5 million for three high-yield palm oil projects.

Syria has received a \$72 million loan for a power project at Mehardeh on the Orontes River. The project is part of a \$704 million power development program.

Yemen has received two IDA credits totalling \$17.1 million to assist in the financing of a water supply and sewerage project and a highway project at Hodeida, the country's main port.

A \$25 million loan for Singapore will help finance an environmental control project. It includes construction of an incineration plant that is expected to be able to handle 1,200 tons of refuse daily.

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### Oil Boom Hits Guatemala

Twenty-seven foreign companies are seeking oil exploration rights in Guatemala as an oil boom surges across the Central American nation.

Five areas are believed to contain petroleum reserves. Two 3,000-meter test wells were drilled this spring in Caribbean coastal waters at a cost of \$14 million. An inland field, already tested, is estimated to contain 30,000 barrels daily in reserves.

The Guatemalan government only began oil exploration in 1972 when word was received of two Mexican wells near the countries' mutual border. Two experimental wells had been drilled near the Mexican fron-

tier by Resources of the North, a subsidiary of Basic Resources International, each in at 1,000 barrels a day.

A Texas firm, Shenandoah Oil Corp., and Saga Petroleum of Norway operate one well that since 1974 has been producing about 2,250 barrels daily.

Spokesmen for some firms have asked President Eugenio Laugerud Garcia to relax Guatemala's present oil exploration and exploitation law. It requires a \$5,000 million minimum investment, gives Guatemala 70 per cent of all benefits and restricts foreign companies to 400,000 hectares each.

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### Plan Would Control Jungle Development in Mexico

Rational exploitation of jungles and forests in the remote state of Chiapas in southern Mexico is urged in a new plan by the State Center of Eco-Development.

About 25 per cent of the Chiapas jungle and forest area has been destroyed through the ancient slash-and-burn farming technique. The center will promote economic development to raise the standard of living of the region's Lacandon Indians—descendants of the Mayans. The Center will also try to minimize the negative impact of farming on the environment.

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### Mexican Mill Produces Paper From Sugar Cane Wastes

A major Mexican paper products manufacturer uses sugar cane waste as a principal ingredient instead of wood pulp.

Kimberly Clark, S.A. began using sugar cane bagasse two years ago on an experimental basis. The firm produces 55,000 tons of tissue and industrial paper each year. The bagasse is shredded, dried, cooked and bleached. Then it is run through the pulp and paper-making machines and emerges identical to

the wood-based product. Because cane mills otherwise use bagasse as a fuel for their furnaces, the paper company supplies the mills with petroleum for that purpose.

New experiments are now underway in Mexico to produce paper from cereal chaff and the lint from cotton.

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### British Experts Study Energy Waste in Industry

A British project aimed at eliminating energy waste in industrial processes carries an apt name—MISER. It is Methodology of Industrial System Energy Requirements.

MISER consists of a team of technical experts studying energy use and conservation in the United Kingdom's industrial sector. It is not a government committee, according to its chairman, Fred Roberts, although the initiative for the project came from the Department of Energy.

One of MISER's first tasks will be to establish methods of obtaining and analyzing data so that comparisons can be drawn from one industry process to another.

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### Big Future Seen For Solar Power Development in Brazil

Sunny Brazil has a large potential for using solar energy, but only in the long range. This is the conclusion of Jose Mario Miccolis, coordinator of FINEP, a Brazilian group studying alternative energy sources. The group is conducting a \$2 million study including such short-range solar projects as agriculture and seawater desalting.

Miccolis urged a massive solar energy program for Brazil and called upon the country's universities and industry to cooperate.

The major project at present is a nationwide program for measuring solar radiation levels. About 40 monitoring stations are to be set up



across Brazil, and the government's Meteorological Department will use the data to prepare a map showing the distribution of solar radiation and potential for solar energy development.

### Hong Kong Strengthens Oil Spill Cleanup Unit

Hong Kong's Marine Department's Oil Pollution Control Unit will be strengthened by the addition in September of a specially designed launch costing \$365,800.

The pollution control fleet presently consists of two vessels permanently attached to the unit and two standby craft fitted with spray booms.

Another 20 craft are expected to be fitted with spray booms soon.

The new 73-foot launch, the biggest and best equipped in the fleet, will have oil dispersant storage tanks, spray booms and agitating devices, a high pumping capacity for spraying emulsifiers and lifting equipment for use in deploying and recovering oil containment booms.

### Hamburg Initiates Environmental Phone

In an effort to arouse public concern and interest in environmental problems, the city of Hamburg, Germany, has set up a telephone service to answer questions on the environment, process complaints and help solve problems.

More than 700 calls were handled on the first day the service was operational, far exceeding the most optimistic expectations. The most common complaint was noise. Unbeknownst to officials at the Fuhlsbuttel Airport of Hamburg, the doors of a soundproof hanger had been left open during the night. The sounds of screaming jet engines being put through their paces had cats, dogs and babies howling throughout the night adding to the bedlam.

The second most common com-

plaint involved offensive odors produced by industrial areas. The concentrated public voice provided the needed momentum to initiate corrective measures.

With few exceptions, such as the lady demanding the arrest of the sausage salesman who left his wares locked in her toilet, or the man who called complaining about odors emanating from a local Indonesian restaurant, most of the callers had "a justifiable point to make," one city official told *World Environment Report*.

### China Steps Up Water Control Efforts

More than 1.4 million water-control projects have been started in China, of which two-thirds are completed, according to government officials.

The Chinese farm-building effort is currently concentrating on increasing the amount of land that is drought- and waterlogging-proof. They are doing this through ground levelling.

Locally, smaller projects and their related facilities are being increased. These small projects depend to a great extent on the self-reliance of local communes and brigades.

### Irish Bulldozers Threaten Homes of the "Little People"

The Irish Government is being pressured to protect the country's 30,000 fairy forts.

These usually circular raised mounds of earth or stones are traditionally thought to be the homes of the legendary "little people" of the countryside. With superstition on the wane, hard-headed land developers are bulldozing the ancient forts for development.

Some of the forts are thought to be 2,000 years old and archaeologists are demanding that the government stop the destruction.

### Environment Education in Brazil

The Brazilian Ministry of Education plans to begin ecology classes in all primary schools.

"The aim of the course is to instill in students a consciousness of the necessity for preserving the environment," a Ministry of Education spokesperson said. No target date has been set, but classes are expected to begin soon on an experimental basis.

### French Proposal Would Boost Industrial Waste Recycle

The French Senate is studying a draft bill calling for controls over the disposal of industrial wastes and the recovery of energy-producing material where possible.

The bill provides particularly for re-use and recycling of hot water from industrial plants, which is now usually dumped into rivers. Supporters of the bill propose that such thermal discharges be used for municipal heating.

### Disposal of Animal Wastes

Ireland's leading agricultural cooperative has announced a \$30,000 grant to *An Foras Taluntais*, a semi-state agricultural scientific study group, for a detailed study of effluent disposal at animal marketing centers.

Cooperative Livestock Marts, an animal marketing group financed by farmers, is the grantor, and the findings of the study will be presented as they are completed.

### Pakistan Studies Coal and Sun as Oil Substitutes

The Pakistan Academy of Science and the National Science Council have recommended the establishment of an institute of solar energy and the exploitation of Pakistan's coal reserves.

The government is actively considering use of Pakistan's 66 million tons proven coal reserves.





# World Environment Report

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## Pollution Can Be Controlled Without Hurting Development

**NEW YORK**—Four times as much pollution will be generated on a global basis in the year 2000 as in 1970. But more than 95 per cent of these contaminants could be prevented from entering the environment without significant cost or impediment to world development.

These are the preliminary findings of a United Nations sponsored study being carried out at Harvard and Brandeis Universities by a group of economists headed by Wassily Leontief. The study is supervised by the Centre for Development Planning, Projections and Policies of the Department of Economic and Social Affairs of the UN Secretariat here. It is financed by a grant from the government of the Netherlands.

The fastest rise in the generation of pollutants, according to the preliminary findings, will come in the developing countries, with an eight-fold increase in Latin America and a ten-fold rise in Africa and Asia. Most of the world's pollutants will still be generated in the developed nations, however.

The total current cost of pollution abatement, the study concludes, if all abatable pollutants were in fact abated and if these costs were equally spread in time, would in no case exceed 0.8 per cent of the gross product of any region, and, if investment for abatement purposes is added, the total cost would not exceed 1.2 per cent of the gross product.

This would mean an expenditure of about \$150 billion per year, worldwide. This is large in absolute dollar cost, but is actually small relative to world production. Furthermore, the study points out, "reductions in net emissions of pollutants and the consequent improvements in air and water quality actually contribute positively not only to the quality of life but also to the productive potential of an economy." The net total economic benefit to society of environmental programs is positive.

However, the study warns, if pollution control expenditures are not made in time, unabated pollution might soon reach levels that endanger normal economic growth and development and ultimately cost much more to control. This is already the case in many developed countries.

To perform the study, an economic model of the world has been constructed. The world economy is

divided into 15 regions, each of which is described in terms of 45 sectors of economic activity. The environmental factors considered are those concerning pollution, constraints on the extraction of natural resources and the production of food, changes in patterns of consumption and investment, changes in human settlements, and scientific and technological change.

The other factors considered—in their relationship to these environmental factors—are the growth targets of the International Development Strategy adopted by the UN in 1970.

The preliminary results of the study are based only on a simplified 4-region, six-industry structure, and the calculations are limited to a comparison between 1970 and 2000.

## Common Market Seeks Role In Mediterranean Cleanup Treaty

**BRUSSELS**—European Common Market officials are hoping to play a large part in the negotiations now underway following the agreement in Barcelona to draw up a treaty to protect the Mediterranean from pollution (*WER*, Feb. 17, 1975, p.1).

Although only three of the nine EEC members—France, Italy and Great Britain—have been invited to take part in the plenipotentiary conference on the Mediterranean planned for late 1975 or early 1976, EEC officials want the entire Community to participate and sign the treaty. This was the case with the Paris Treaty on prevention of marine and land-based pollution in the Northeast Atlantic.

The EEC executive commission here has asked the

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member states for the authority to enter into the negotiations and treaty.

Part of the EEC approach, if adopted, would be to seek provisions similar to the Paris Treaty with land-based pollution. Draft agreements have already been drawn up for the Mediterranean dealing with dumping from air or sea and with pollution emergencies such as oil spills. Other sections are expected to cover pollution from exploration and exploitation of the seabed.

The proposed treaty is one part of the action plan approved last February at the Barcelona meeting, which was held under the auspices of the UN Environment Programme with the support of the Food and Agriculture Organization and the World Health Organi-

zation. The other elements are studies of integrated planning, development and management of the Mediterranean's resources; coordinated research, monitoring and exchange of information; institutional and financial arrangements to carry out the plan.

The Mediterranean is bordered by 150 towns with a total population of 100 million, which is expected to double by the year 2000. Tourism and industry compound the natural problems of lack of outlets, excessive salinity and high oxygen depletion. The sea also suffers high levels of heavy metals, indiscriminate dumping by ships of all nations, river-borne debris from the Nile, the Rhone, the Po and the Ebro, untreated sewage and wind-borne pollutants.

DAVID FOUQUET

## Brazil Agency Is Drafting National Pollution Legislation

**BRASILIA**—Brazilian and foreign environmental experts who gathered here early this month for the week-long National Meeting on Protection and Improvement of the Environment concluded that solving Brazil's pollution problems is a political and not a technical question.

Therefore, the consensus of those attending was that Brazil must have a clear-cut national policy on the environment and that it must be backed up with a competent administrative infrastructure and much larger budget than the country's current effort.

Today, Brazil's Special Environment Secretariat (SEMA) has only 40 employees and an annual budget of \$600,000.

Following the meeting, SEMA's council began drafting a 25-clause environmental bill that will be presented to the Ministry of the Interior. Paulo Nogueira Neto, secretary general of SEMA, said the proposed legislation would unify all existing environmental laws into one single code.

Although specific details were not released, it is believed the proposed legislation will also strengthen these laws and fill in the gaps. The document is believed to encourage relocation of industry out of residential and urban areas, to require prior clearance for new industrial projects from local environmental agencies, to provide for closing down an industrial establishment found to be a consistent polluter.

The two-year-old SEMA was strongly supported at the meeting, and it is expected one immediate outcome will be a tripling of its staff and a sizeable increase in its budget.

There were also moves at the meeting to strengthen SEMA further by taking it out of the jurisdiction of the Ministry of Justice and either raising it to the level of an Environmental Ministry or making it into an agency directly responsible to the president. But Nogueira

rejected these moves and said it would be enough for now to strengthen the existing organization.

The urgency of Brazil's environmental problems was underlined for the participants by a major air pollution incident in the industrial center of Sao Paulo during the meeting. The pollution count in Sao Paulo rose to its highest recorded levels. Sulphur dioxide registered as high as 200 micrograms per cubic meter, while suspended particulates hit 300 micrograms.

Sao Paulo has hundreds of factories, heavy automobile traffic and a population of 9 million. This latest scare motivated the mayor to press for urgent pollution control measures, but experts estimate it will take at least three years to take effective steps.

The outcry over the Sao Paulo situation and the spirit of the Brasilia meeting may provide the push needed to carry the new legislative proposals through the various levels of government to become law and then to see that they are enforced.

GEORGE HAWRYLYSHYN

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## Pesticides: Global Effort Urged for Integrated Pest Control

**ROME**—An international conference on pesticides held here last month endorsed the use of non-chemical methods for controlling agricultural pests but declared that chemical controls are still essential, particularly in light of today's continuing food shortages.

The Conference on Pesticides in Agriculture and Public Health was organized by the UN's Food and Agriculture Organization (FAO) in response to a resolution of the World Food Conference held here last November. Experts from 50 governments, UN agencies, intergovernmental organizations and the chemical industry debated the worldwide supply and demand for pesticides, the economic and health problems arising from their increasing use and alternative methods for pest control.

The case against over-use of pesticides was put by Jaime Hurtubia, a program officer from the Nairobi headquarters of the UN Environment Programme (UNEP). He pointed out that serious problems are expected in the near future from the environmental effects of chemicals used in agriculture, particularly pesticides. "It is not likely these difficulties will be overcome unless alternative technologies are devised now," he said.

**Pesticide Impact**—Concern over the impact of synthetic pesticides, which have contributed greatly to increasing agricultural output since World War II, is not new. The short-term efficiency of these chemicals and their simplicity of application have led to over-use, with consequent environmental problems such as residues in food and waters, development of resistant pests, and harm to farm workers and to non-pest species. The soaring cost of chemicals brought about by the rise in oil prices has added a new dimension to the problem, particularly in the developing countries.

Hurtubia described UNEP's efforts for improving methods of integrated pest control in which chemical methods are combined with non-chemical approaches such as resistant plant varieties, natural parasites and predators, disruption of pest life cycles at their weakest points, crop rotation, control of planting times, quarantine systems, limits on the movement of products.

Hurtubia said UNEP is seeking a catalytic role in developing environmentally sound pest management systems. As a first step, UNEP is convening task forces of experts in cotton pests and vectors of malaria and schistosomiasis to work out a proposed multinational program that could be considered by an intergovernmental conference.

Major parts in this effort are expected to be played by FAO, the World Health Organization (WHO), the UN Educational, Scientific and Cultural Organization (UNESCO), the UN Development Program (UNDP), the World Bank and other international financial institutions and developments agencies, according to Hurtubia.

**FAO Program**—In 1966, FAO organized a first panel of experts to review and standardize techniques for integrated pest control and to promote research based on ecological considerations. But introduction of these methods can be a slow process. For example, the risks of bringing new organisms such as viruses or bacteria into an environment to control pests must be carefully assessed before they are introduced on a practical scale.

The current food crisis is also holding back the widespread adoption of non-chemical methods, the rationale being that when people are starving it is no time to restrict the tools required to develop agricultural productivity.

But FAO has worked actively with UNEP to promote the environmentally sound approach. Among the joint ongoing projects of the two agencies are a Global Program for the Development and Application of Integrated Pest Control in Agriculture, studies on the effects of pesticides on aquatic resources and methods for protecting world fisheries.

FAO and UNEP are also working with WHO to monitor food contamination and to set international standards for limits on pesticides in foods.

**Resolutions**—Last month's conference agreed on resolutions calling for a worldwide effort for more efficient production and application of pesticides with minimum harm to human health and habitat.

One resolution recommends the highest priority in integrated pest control be given to cotton and rice, maize, sorghum and eventually fruits.

Other resolutions call on FAO and other agencies to establish an Information System on Pesticide Demand, to develop plant protection services, to collect information on pesticide residues and to assess post-harvest losses in stored produce.

VITTORIO PESCIALLO

## Denmark Considers Incentives for Industrial Pollution Control

**COPENHAGEN**—Denmark's Minister for the Environment, Helge Nielsen, is studying a proposal to give financial assistance to industries for environmental protection.

A special government commission recommended support in two forms: (1) a general provision for reduced interest on loans, as well as investment grants up to 50 per cent of a firm's environmental investment; (2) a special provision to go into effect quickly whereby a contribution up to 75 per cent of the investment could be made.

A result in either case would be a significant reduction in industrial pollution coupled with the creation of



hundreds of new jobs, according to the commission.

The commission proposed that over \$55 million in investment rebates, state guarantees for loans or direct grants be made available from public funds over the next three years. The commission calculated this amount would generate 1,500 jobs in one year.

Nielsen calls the proposal "very interesting" but points out that Denmark's environmental policy, as well as that of the European Economic Community, is built

on the principle that the polluter should pay. However, he adds that special situations in the transition period since the environment law came into effect could justify a temporary departure from this principle.

For example, he cites the facts that environmental legislation is more lenient in some of the countries Denmark competes with and that many countries already do aid environmental control investment.

## Strong: Solve Cities' Problems

*NAKURU, Kenya*—It is vital now to look into and solve the problems of the world's greatest cities, according to Maurice Strong, executive director of the UN Environment Programme. Many cities are already experiencing a breakdown of essential services, he said, and we must find ways of dealing with at least the most important of these, such as maintaining an adequate supply of water.

Within 25 years, Strong pointed out, there will be almost 300 cities in the world with populations over one million, and no less than 16 of these will be megacities of over ten million. National and regional action to keep these cities inhabitable and improve the quality of life within them is essential, he said, and must not be delayed.

Strong made these remarks on the occasion of World Environment Day, June 5, which he marked by a visit to the National Park on Lake Nakuru adjacent to this town in Kenya's Rift Valley.

In New York City, World Environment Day was marked by a international conference—"Earthcare"—sponsored by the National Audubon Society and the Sierra Club.

At the conference, President Carlos Andres Perez of Venezuela was honored with a special Earthcare award for his efforts on behalf of conservation, and Justice William O. Douglas was presented with the John Muir Award.

## French Village Will Be First Community Heated Entirely by Sun

*PARIS*—The sunny village of Mejanne-le-Clap in southern France will soon become the world's first municipality entirely heated by solar energy, according to plans announced here.

The conversion is planned for reasons of economy and to improve the environment, according to an official of the architectural and city planning company involved.

Solar cell panels placed on roofs will convert solar energy into electricity that will be used to provide heat

and hot water for the entire village, including its swimming pool.

A parallel electrical center, connected to the nationwide net of the Electricite de France, will take the cheaper night-time high tension current and store it as a back-stop in case of a long period of bad weather. The need is not expected to be great, because Mejanne-le-Clap enjoys an average of 2,000 hours of sunshine each year.

Jean Richard, director of the Societe d'Economie Mixte d'Amenagement of the Gard Department said that his group is now ready to run tests open to all manufacturers of solar receiver-transformer equipment to determine which will be the most efficient for the project.

## Mexico Will Fine Violators of Water Pollution Law

*MEXICO CITY*—Some 150,000 industries in Mexico's central valley face fines up to \$400 each for failure to comply with the country's water pollution laws.

Since August of 1974, industries have been required to register the amount and nature of the contaminants they discharge into the 300 streams and rivers that flow through the valley. About 60,000 industries have complied, according to Eloy Urroz, director general of the water use and contamination prevention in the federal Secretariat of Hydraulic Resources, but 150,000 have still not registered.

Four thousand of the unregistered factories are in metropolitan Mexico City and will be fined "in the coming months," according to Urroz, if they do not comply with the nation's first legal effort to enforce water pollution controls.

By August, 1977, all municipalities, housing developments and industries in the valley must treat their liquid wastes before discharge. Means are being sought for reusing municipal waste waters for industrial purposes. Industries now consume treated water used for domestic supply.

Under the year-old federal water pollution laws, industries that refuse to register discharges or fail to clean them up may be taken over or closed down by the government, in addition to the fines.



## Special Report: OECD Tackles Wide Range Of Environment Problems

**PARIS**—The very membership of the Organization for Economic Cooperation and Development (OECD)—24 of the world's most industrialized and hence most polluted nations—dictates that the group should take a major role in international environment programs.

Therefore, OECD created an Environmental Committee in 1970, and it has grown to be one of the organization's largest and most active directorates. The Environment Committee's work overlaps that of other OECD committees such as those dealing with agriculture, fisheries, oil, energy, industry, and nuclear power.

But the Environmental Directorate is OECD's major weapon in this area. It is studying the international economic and trade implications of environmental problems and regulations and the need for harmonizing the approach to these issues. It is also studying the environmental aspects of energy production and use, waste recycling and land use planning. And it is involved in "early warning" and consultation procedures on persistent chemicals.

The directorate has concentrated on two main objectives, both geared to improving the quality of life: (1) assisting member governments to define their attitudes toward pollution and to harmonize their control policies relative to varying ecological, public health, social and economic factors; (2) injecting environmental awareness into the formation of national policies and assessing the impact on international trade.

**Other Agencies**—OECD collaborates in its environmental programs with the Commission of the Common Market, the UN Environment Program, the World Health Organization, the World Meteorological Organization, the Food and Agriculture Organization, the Economic Commission for Europe and the Council of Europe.

The OECD environment committee, which met at the ministerial level for the first time last November, has broken down its over-all program and assigned specific tasks to working parties. Here is a description of these groups and the work they are doing.

—Subcommittee of Economic Experts: has established guiding principles for international economic aspects of environmental policy, has studied pollution control costs and is studying the economics of transfrontier pollution. It formulated a resolution on harmonizing national environmental policies, which was approved by OECD in 1972. In

1973 it began to assess pollution control costs on an industry-by-industry basis and this work is continuing.

—Ad Hoc Group on Transfrontier Pollution: works on administrative, legal and institutional questions. It evaluated transfrontier principles in 1974 and drafted a code of conduct. This code does not lay down mutually acceptable pollution levels, but aims only at banning excessive levels. It includes the principle of non-discrimination whereby transfrontier pollution must not exceed the level the source country regards as acceptable in its own territory.

—Experts on Environmental Impact of Energy Production and Use: have assessed long-term energy trends and problems. This group has identified the primary pollution abatement policies related to energy generation and use. It calls for national approaches in which governments would consider energy and environment as only two aspects of one unified issue.

—Air Management Sector Group: has studied such specific problems as fluorine compounds from aluminum smelting, has reviewed control techniques for power plants, cement manufacture and the iron and steel industry, and has proposed regulations and methods for monitoring. It has recommended techniques for avoiding photochemical air pollution in countries where this has not yet become a problem.

—Program to Measure the Long-Range Transport of Air Pollutants: has established a Europe-wide monitoring network to determine to what degree sulphur compounds and particulates are transported beyond 400 km. Eleven countries are involved in this program, which also attempts to forecast pollution variations.

—Ad Hoc Group on Fuel Combustion: studies emissions related to fuel quality and source, and harmonizes policies for reducing sulphur oxides and particulates (in guidelines issued last year).

—Water Management Sector Group: has established information exchange on eutrophication control policies, and on river basin management. It has drawn up guidelines for testing the biodegradability of detergents.

—Ad Hoc Group on Pollution from Pulp and Paper Industry: has established an information exchange and assessment of policies in this field.

—Sector Group on the Unintended Occurrence of Chemicals in the Environment: has established an information exchange and guidelines for regu-

*(continued on page 8)*



## Briefs . . .

### More Nuclear Wastes Dumped In Northeastern Atlantic

The Organization for Economic Cooperation and Development (OECD) has announced that some 4,500 tons of nuclear wastes will be dumped in the northeastern Atlantic during June and July.

The disposal of the solid wastes has been organized and will be supervised by OECD's Nuclear Energy Agency (NEA) and will be carried out in accordance with the principles of the Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention).

The concreted and bituminized wastes are produced by nuclear energy establishments in Belgium, the Netherlands, Switzerland and the United Kingdom. The wastes, which are packed in metal drums, will be transported to the dump site in accordance with national and international regulations governing transport of radioactive materials.

The dump site is a deep sea area about 1,300 km. due west of France's Atlantic coast that has been used before for nuclear wastes. It is a circle of about 65 km. and is about 4.5 km. deep.

### Environment Center Adds Canadian Advisors

The Center for International Environment Information has added three more Canadians to its Advisory Committee. They are Dr. Michel Maldague, director of environmental programs at Laval University, Dr. Theodore Mosquin, executive director of the Canadian Nature Federation and John Sweeney, vice president for technical development and environmental affairs for Consolidated-Bathurst, Ltd.

Dr. Peter Bird, director of En-

vironment Canada's international programs, joined the Advisory Committee in January.

The Center, which publishes *World Environment Report*, was established with United Nations support by the United Nations Association of the USA early in 1974.

The Advisory Committee, which advises the Center on policy questions, is made up of representatives of the mass media, industry, government and conservation organizations in Canada and the U.S. Its chairman is Arthur Reef, vice president of AMAX, Inc., and Maurice Strong, the Canadian executive director of the UN Environment Programme is also a member.

### Orange Growers Buy Wasps Instead of Pesticide

At a seminar discussing insect pests held in Algeria, a Moroccan research scientist told about biological methods Moroccans have begun using to fight a tiny insect that attacks orange groves.

The pest, called "Californian Flea" or *Aonidiella Auranti*, attacks the fruit making it unsuitable for export. A tiny wasp, *Aphytis Mellinus*, is a natural enemy of the Californian Flea. It lays its eggs in the body of the flea, which is destroyed by the larvae before the flea can attack the fruit. Use of insecticides to kill the pest make the orange rind inedible.

An association of citrus fruit producers in Morocco has financed construction of an insect raising center. The project delivers boxes of millions of little parasite wasps to members of the association. The boxes are hung on orange or lemon trees with a small hole for the insect to get out.

Instead of spending \$228 per hectare for chemical pesticides, Moroccan citrus fruit producers spent about \$142 per hectare for wasps.

The Algerian orange crop was seriously attacked by the Californian Flea this year, and so growers were particularly interested in the Moroccan scientist's information.

### World Bank Makes Loans For Environmental Projects

The International Bank for Reconstruction and Development (World Bank) and its affiliate, the International Development Association (IDA) have announced loans and credits for several projects having environmental interest:

A credit of \$9 million will help finance a water supply and sanitation project in Kabul, the capital of Afghanistan. The project is the first stage of a 30-year master plan for water supply and sewerage in Kabul.

Haiti receives a \$20-million credit for road rehabilitation, the main objective of which is reconstruction of the 250-km Northern Road linking Port-au-Prince with Cap Haitien.

Yugoslavia receives a loan of \$70 million to help finance a \$242.5 million hydroelectric project in Bosnia-Herzegovina.

A credit of \$26 million will assist Zaire in improving and expanding its river-rail transport system, known as the "Voie National."

### Useful Compost Is Made From Water Hyacinth

The Sri Lanka Department of Agriculture in Colombo is manufacturing compost from water hyacinth weed harvested from the city's 400-year-old Dutch-built Lake Beira. The compost is sold to householders and gardeners.

The water hyacinth pest is common in Sri Lanka but did not appear in Beira Lake, an important link with Colombo harbor, until early this year. By April, the whole surface of the lake was covered with a thick carpet of the weed.

The Colombo Port Commission undertook to clear the lake by hauling out the weed with cranes and also sought bids from contractors. The Commission said it would dump the hyacinth in the ocean.

But this news brought protests



and suggestions for the compost program. The Commission agreed to deliver the weed to the Department of Agriculture's Home Gardens unit for conversion. But not all the weed collected can be converted, and the surplus is dumped into the sea.

To prevent recurrence of the water hyacinth, the Commission will pump sea water into the lake to change it from fresh to salt. While this will destroy the aquatic life in the lake as well, the Commission points out that, because the lake is at sea level, salinity changes in the past have frequently wiped out its fish life.

### Mexico Looks To Desert For Solar Energy Projects

Mexico's National Institute of Nuclear Energy is looking toward the vast northern Sonora Desert as a possible energy source for the next century. The Sonora is the second hottest desert in the world, after the Sahara, in terms of energy per square meter, according to the institute's scientists, and could be exploited as a major solar heat source.

For the remainder of this century, institute scientists are concentrating on nuclear energy, hoping to use non-enrichment uranium from Mexico's estimated reserves of up to 6,000 tons. Institute investigators believe the country's reserves are actually much greater.

### Ireland's Navy Takes Role In Oil Spill Cleanup

The Republic of Ireland's Naval Service will play a major role in the country's efforts to cope with oil spills. The Navy will establish a special group with a commanding officer in Dublin and three junior officers, one each on the east, south and west coasts. The group will study the problems of oil spill cleanup and establish liaison with local governments. The Navy will place

stockpiles of oil dispersant at various points around the coast.

The Navy is also anxious to establish a sea unit, which would conduct pollution control operations more than a mile from the coast.

### Protein From Orange Peel

Scientists in Mexico's National Child Protection Institute are trying to reclaim usable protein from the discarded peels of oranges and tamarinds, and milk serum. In principle, these materials are potential sources of high quality protein, but methods for extracting and reusing it as a diet additive are still under study. Because these source foods are now wasted, success in the research would mean an important new supply of protein in the Mexican diet.

The institute, which is in Mexico City, is actively supported by Maria Ester Zuno de Echeverria, wife of Mexico's president.

### Ecology Courses Offered in Algerian Universities

Ecology courses for science students at Algiers, Oran and Constantine Universities will start in the academic year that begins in October.

Algerian educational authorities consider ecology an indispensable discipline in planning and development programs.

The second Algerian Four Year Development Plan (1973-77) includes a number of important irrigation and agricultural development projects where preliminary study of ecological conditions is essential for preservation of a proper biological balance.

Deforestation and overgrazing have destroyed a great deal of Algerian land, making reclamation essential.

Ecological courses have been offered for three years at the Algerian National Institute of Agronomy at El Harrach, just outside Algiers.

### Japan Still Spending on Environment Despite Recession

Despite Japan's continuing economic recession, the country's pollution control programs are proceeding on schedule on a nationwide basis.

Orders for pollution control equipment from Japanese manufacturers were more than \$2.2 billion in 1974, a 35 per cent increase over 1973. Estimates run as high as \$4.9 billion in new orders for 1975, according to the Japan Society of Industrial Machinery Manufacturers.

Japanese companies are interested mainly in desulfurization equipment and other types of air pollution control products, but orders are also climbing for water treatment and disposal equipment. The fastest growth rate is in orders for waste disposal systems.

Japan's increasingly strict environmental regulations are making the pollution control industry one of the most profitable industrial sectors in the country.

The industry is also receiving rising orders from the Japanese government for equipment needed as part of the nation's fourth five-year sewerage construction program, which is expected to produce \$33 billion in new work this year.

But the Society reports its members are facing rising labor and material costs that lower profits under existing contracts. And because the environmental control field is relatively new and competition intense, large amounts must be spent on research and development.

### Pakistani Pollution Control

The Council of Ministers of Pakistan's most heavily populated province, Punjab, has approved a plan for the establishment of a pollution control authority. Legislation is expected to pass.

Punjab Assembly Speaker, Sheikh Rafiq Ahmed, said the provincial government has allocated 22 million dollars toward development of water sanitation systems.



OECD Report (continued from page 5)

lating the use of polychlorinated biphenyls (PCBs) and an approved recommendation on reducing mercury emissions. It has pressed the need for controlling cadmium, urged cooperation on controlling unregulated chemicals and has harmonized policies for control of persistent chemicals.

—Sector Group on Urban Environment: has assessed measures to reduce traffic, to reduce airport nuisance and reduce noise and has established information exchange on shaping the growth of cities.

—Ad Hoc Group on the Impact of the Auto-

mobile on the Environment: has assessed policies for reducing noise and emissions from automobiles, for limiting the use of cars in cities while improving public transport, and has made recommendations regarding international trade in vehicles.

—Mediterranean Pilot Study Group: has assessed the economic relationship among tourism, industry and control of environmental quality along the coast. This has involved case studies on the environmental impact of steel works and power plants and the correlation between economic development and pollution in tourist resorts.

WILLIAM G. MAHONEY

## Calendar

**June 30-4 July**—International Symposium on Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environment, Otaniemi, Finland.

**July 1-7**—Scientific group on Methods of Monitoring Carcinogenic Chemicals in the Environment, Geneva, sponsored by World Health Organization.

**July 3-4**—General Meeting of International Centre for Industry and the Environment, London.

**July 9-12**—Symposium on the Changes in the North Sea Fish Stocks and Their Causes, Aarhus University, Denmark, sponsored by International Council for the Exploration of the Sea.

**July 11-13**—Inter-American Commission on Nuclear Energy meeting to discuss construction of nuclear reactors on the continent, Caracas.

**July 14-17**—Seminar on the Management of the Transfer of Industrial Technology, Geneva, sponsored by Economic Commission for Europe.

**July 14-18**—Expert group on Center for Marine Science and Technology, Lagos, Nigeria, sponsored by Economic Commission for Africa.

**July 14-18**—Working group on Oceanographic Data Exchange, New York, sponsored by UN Educational, Scientific and Cultural Organization and Intergovernmental Oceanographic Commission.

**August 1-11**—International working meeting on Teacher Training in Environmental Education and Conservation, Caerleon, U.K., sponsored by International Union for Conservation of Nature and Natural Resources.

**August 18-20**—Specialized Conference on Nitrogen as a Water Pollutant, Copenhagen, sponsored by International Association on Water Pollution Research.

**August 18-23**—Symposium on Long-term Climatic Fluctuations, Norwich, U.K., sponsored by World Health Organization, International Association of Meteorology and Atmospheric Physics.

**August 24-29**—Preparatory Committee, Conference on Human Settlements: Habitat, New York, sponsored by UNEP.

**August 24-6 September**—Symposium on Methods of Chemical Investigation of Natural Waters sponsored by International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

**August 26**—Symposium on the Large Scale Modification of Fresh Water Systems and Their Effects on Oceanic Environment, Grenoble, sponsored by International Association for the Physical Sciences of the Ocean; International Association of Meteorology and Atmospheric Physics; and International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

**September**—Workshop on Population Resources and Environment in West Africa, Senegal, sponsored by Council for the Development of Economic and Social Research in Africa.

**September 1-6**—Seminar on Collection, Disposal, Treatment and Recycling of Solid Waste, sponsored by Economic Commission of Europe.

**September 2-4**—Committee on Water Problems, Geneva, sponsored by Economic Commission of Europe.

**September 14-19**—International Symposium on Environmental Monitoring, Las Vegas, sponsored by World Health Organization and U.S. Environmental Protection Agency.

For further information, contact the Center for International Environment Information.





# World Environment Report

VOL. 1, NO. 10

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JUNE 9, 1975

## Push for Nuclear Energy Generates Global Debate

**NEW YORK**—In the wake of last year's "energy crisis" many countries have announced a strong new commitment to nuclear power to fill a major part of their future energy needs.

According to the Atomic Industrial Forum, 38 countries, excluding the U.S., have increased their planned use of nuclear power 34 per cent within the last year. This has meant an announced planned output in these countries of 294,000 megawatts (electrical) (MWe) as of the first quarter of 1975 compared with 221,000 MWe in the first quarter of 1974.

But accompanying this increased commitment is a growing outpouring of questions, protests and doubts over the safety of nuclear power, its environmental impact and its cost.

*World Environment Report* asked its correspondents to assess the strength of nuclear commitment in their countries and the degree to which this commitment is being questioned. The following is a roundup of their reports.

### In Europe Public Demonstrates Against Nuclear Expansion Policies

The entire nine-member European Common Market (EEC) has a goal for 1985 of increasing the use of nuclear power from the present 1.4 per cent of total energy to 17 per cent. In 1974, 6.2 per cent of the EEC countries' electricity was produced by nuclear plants, up from 5.5 per cent in 1973.

But major controversy has developed over these plans. Mass demonstrations, conferences, petitions by scientists and official studies have become commonplace in Europe over this issue. There have even been instances of sabotage.

Most of the agitation has seemed to center in France and Germany, the EEC countries with the most ambitious nuclear plans, but considerable opposition has also surfaced in Belgium and Great Britain.

The issue is less intense in The Netherlands because the government has deferred its nuclear plans. In non-

EEC Sweden public opposition led the government to curtail sharply its previously announced nuclear plans which would have made Swedes the biggest per capita consumers of nuclear power in the world.

In Switzerland, a protest group occupied a proposed nuclear plant site near Basel, and other protesters demonstrated in front of the parliament building in Bern. Major demonstrations have also been held near the French-German border, and in Paris, police used tear gas to disperse a crowd of 5,000 that had gathered to protest government plans to build 50 nuclear power stations.

In Belgium there have been smaller-scale demonstrations, and 400 scientists petitioned the government to reconsider plans for building ten nuclear stations by 1980.

The EEC's executive commission has addressed these concerns with several proposals to study security, thermal pollution and radioactive waste disposal.

Here is a closer look at some of these European developments.

**Ambitious French Plans**—Last year, the French government announced a nuclear program aimed at supplying 25 per cent of the country's energy needs by 1985, and 50 per cent by the year 2000.

The program would require about \$20 billion by 1980 for construction of six nuclear centers each year. Costs have not been projected to 2000, but the program calls for a total of 160 to 200 nuclear plants by that time, grouped in about 40 sites. Output would be 160,000 to 200,000 MWe. The program is being carried out by the government-run Electricite de France (EDF), which projects that the cost will run to 3 per cent of the GNP for 25 years.

There are already nuclear centers at seven sites in France, built under the national program that began in 1945 with creation of the Atomic Energy Commission.

EDF is now awaiting an expected government green light to order four new plants, each comprising two pressurized water reactors constructed under Westinghouse license by Framatome, a joint Westinghouse and Creusot-Loire venture. Each plant would be rated at



1,350 megawatts, making them the largest power reactors built outside the Soviet sphere.

But the French program is running into trouble due to rising construction costs, possible reduction in oil prices and the opposition of environmentalists. Much of this concern has been raised by the national information campaign the government undertook when it announced its nuclear plans.

There have been sit-ins, protest marches, and on May 2 several bombs were exploded near a nuclear reactor at a power station being constructed at Fessenheim in the Alsace. (However, the latter action is believed to be the work of extremist-terrorists.) Fessenheim is on the Rhine River which forms the border between France and Germany. For months communities on both sides of the river have been protesting plans to build industrial plants and power stations in the area.

Press opposition has been led by the news weekly *L'Express*, which sponsored a nationwide public opinion survey in late March on the nuclear issue. This showed that 53 per cent of the French public feel the nuclear program deserves national priority, but also showed great fear about the security of the program. Some 47 per cent feel there are not sufficient guarantees against radioactivity, 51 per cent feel the centers could be sabotaged by terrorists, 84 per cent believe a definitive solution must be found for the waste disposal problem. And 48 per cent feel the need for new energy sources is not great enough to warrant the environmental risks of the nuclear program, against 34 per cent who feel it is.

The highest number of those opposed (28 per cent) cite threats to the environment, compared with 21 per cent who fear radioactivity and 11 per cent sabotage.

A surprising 75 per cent of the respondents feel they still do not have enough information to make a judgement.

The opposition to the government's program has been joined by a distinguished academic body, the Institut Economique et Juridique de l'Energie de Grenoble, which has expressed doubts on economic grounds. According to the institute, nuclear power is competitive when oil costs between \$5.75 and \$8 per barrel. But to replace fuel oil with nuclear-generated electricity for industrial or home heating, the breakeven point is \$19 and \$27 per barrel, respectively. The government program calls for such a heating switch-over.

**German Citizen Action**—The West German government also has an ambitious nuclear program, aimed at producing 15 per cent of the country's total energy by 1985, and 40 per cent of its electricity. Ten nuclear stations are now operating, producing four per cent of the electrical supply, 13 more plants are under construction, and 23 are in the planning stages. The planners favor cluster grouping of these plants.

But stiff opposition has arisen from environmentalists and other citizens.

Earlier this year, Alsatian wine growers joined 8,000 demonstrators at the site of a nuclear plant being constructed on the upper Rhine at Wyhl. Small groups continued to camp at the site, and the court upheld an appeal by a "citizens' action group" by ordering construction suspended. The case has been referred to the high court in Mannheim, and could be tied up in litigation for up to four years.

West Germans have also joined their French neighbors in the Fessenheim protests and are supporting Swiss demonstrators occupying the site of a proposed nuclear plant over the Swiss border in Kaiseraugst.

So far, the Ministry of Scientific Research is dealing with this opposition mainly by blaming it on ignorance of the facts. It describes the dangers of radiation as minimal, but concedes thermal pollution presents certain problems. The ministry plans an information campaign.

**British Question**—The United Kingdom leads all countries outside the U.S. in total nuclear capacity onstream, with 29 reactors capable of producing 5,600 MWe. This is ten per cent of electricity needs. Plans for 1985 call for 11,000 MWe, or 15 per cent of electricity demand.

But opposition is rising in Britain too. The state-owned fuel company—British Nuclear Fuels Ltd—felt obliged to open its doors to the press at its processing plant at Windscale after growing criticism from environmentalists claiming that workers were exposed to health hazards.

Plant officials concede that incidents involving radiation have occurred, but claim they were minor cases of skin contamination. The company is defending three legal writs alleging radiation injury to workers. Two of these follow the deaths earlier this year of two former Windscale workers from cancer.

Meanwhile, the influential weekly, *The Economist*, seriously questioned the country's nuclear program last month in an article called "The Case Against Nuclear Power." The article cites the risk of radioactivity escaping from power plants and waste handling facilities, points out the possibilities of channeling peaceful nuclear technology into weaponry, and describes "sound economic reasons for doubting whether nuclear energy can, must, or should satisfy the growth in world energy needs between now and 1985." (continued)

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 Correspondents covering more than 80 countries



According to *The Economist*, the British government should "initiate a thorough review of the costly and delayed nuclear option." The article points out that Britain (and Norway) of all European countries could most safely switch back to oil as an alternative to nuclear power because of the North Sea oil deposits which are just coming on stream.

**Dutch Delays**—Uncertainty about safety and environmental impact led the Netherlands government to postpone for two to three years the construction of three planned nuclear power plants. The delay will be used for a scrupulous study of all aspects of a ten-year energy plan the government submitted to parliament.

The three plants would have a capacity of 1,000 megawatts each, and added to the country's existing 500 MW of nuclear capacity, would account for 20 per cent of electricity produced in 1985.

The government said it prefers the "reluctant approach" rather than the EEC recommendation for rapid commitment to nuclear power by its member states. The Netherlands can afford to take it slowly because of its huge reserves of natural gas.

However, the delay did not silence Dutch nuclear critics, and only partially satisfied a group of "concerned scientists and politicians" who asked for a five-year moratorium before deciding on the building of the plants.

The government said the program would be planned in such a way it could be altered or stopped altogether, depending on the results of the study. Solar and wind energy are included in the study.

Opposition is also growing against Holland's continuing participation in the international breeder reactor project with West Germany, Luxembourg and Belgium. An experimental sodium-cooled fast breeder is to be built at Kalkar, just over the Dutch-German border.

**Italian Bickering**—In Italy, the public apparently remains unaware of the environmental issues surrounding nuclear power. But the country's construction program is being held up by local political bickering, mostly at the community level, over the financial benefits and local jobs to be obtained from the National Electric Energy Agency (ENEL) in return for the permits necessary for building nuclear plants.

Italy aims to raise the nuclear share of electricity production to 15 or 18 per cent by 1980, to 50 per cent by 1985 and more than 90 per cent by 1990.

Today, Italy's electricity generation depends nearly 90 percent on imported fuel oil, and ENEL has declared it will build nothing but nuclear plants from now on, along with some pumped storage facilities.

ENEL now operates three nuclear plants that produce 3.4 per cent of the country's electricity. One more plant is under construction, and four more have been ordered, all 1,000 MW capacity. Planned nuclear output for 1985 is 20,000 MW.

The know-how is mostly U.S., but most of the equip-

ment is made in Italy. The fuel will be manufactured in Italy using enriched uranium imported from both the U.S. and the Soviet Union. Later, fuel will be enriched by the European consortium EURODIF, in which Italy has a 25 per cent interest.

Waste disposal is not yet considered a problem, with the wastes still being stored at the power plants. In the future, a solution will be sought within the European framework, which probably means underground storage in abandoned salt mines in central Europe. If necessary, national storage points could be found on minor islands off the Italian coast.

**Swedish Cutback**—The Swedish government has presented an energy program which includes construction of two more nuclear plants by 1985 in addition to the 11 now in operation. The energy needs will be reviewed in 1978 for post 1985 plans.

This program is a setback for Sweden's power authorities who had recommended construction of 13 more nuclear plants by 1985. That plan ran into stiff public opposition. According to a recent poll, 43 per cent of Swedes oppose nuclear plants, while only 20 per cent support them.

The government's new energy program calls for an increase in hydroelectric development, increased coal imports and energy conservation measures.

## Cost and Inspection Problems Plague Asian Nuclear Development

Except in Japan, environmental problems are the least worry of the Asian countries now developing nuclear power plants or planning to do so. When the question of environmental hazard is raised, most Asian governments simply reply that adequate safeguards have been taken.

The three things that do worry Asian governments are the problem of financing increasingly expensive nuclear construction; the problem of guaranteeing a long-term supply of fuel; the demands by the countries supplying nuclear plants (especially the U.S. and Canada) for firm guarantees and inspection rights to make sure the plutonium produced is not used to make nuclear weapons.

This last point has become particularly sensitive since India's atomic bomb test last year. It is widely believed India used plutonium from a power plant provided by Canada.

While many Asian countries leaped toward nuclear power in the wake of the Arab oil embargo, and many remain committed to its development, these three problems have created significant delays in many nuclear projects.

Here is a country-by-country rundown of the nuclear situation in Asia today.

(continued next page)



**Worry in Japan**—Japan has the biggest nuclear power program in Asia. Construction starts on nuclear plants are expected to exceed those for fossil-fuel plants during the next five years. An estimated 54,000 Japanese scientists and technicians are engaged in nuclear research and development.

Today, five per cent of Japan's electric power comes from eight nuclear power plants, 18 more plants are under construction, and two more are expected to be started soon. The Japanese Central Power Council, which is made up of private power companies and government agencies, plans to raise the nuclear share of electric power production to 14 per cent in 1980, 18 to 20 per cent by 1985, and up to 50 per cent by the year 2000.

This would mean over 15,000 MW from nuclear power in 1980, and up to 60,000 MW by 1985.

But the Japanese have been experiencing continual operating problems with their existing plants, increasing difficulties in getting enough nuclear fuel, soaring costs, and growing environmental opposition to nuclear power.

There are now strong doubts whether the goals of the Power Council can be realized.

Unlike other Asian nations, the Japanese people are extremely concerned about reactor hazards and the ability of the power companies to dispose of radioactive wastes safely. Opposition is usually strong among the residents of areas selected for new nuclear plants, and several plants have been delayed. In January residents of Fukushima Prefecture filed suit to block the Tokyo Power Company from building an 1100 MW reactor near their village.

The public attitude toward nuclear power is not helped by continuing controversy within the government's Atomic Energy Commission regarding the safety of the reactors already operating.

A subcommittee of the commission issued a report last year warning that safety inspections of existing reactors are inadequate because there are not enough competent inspectors. Since then, subcommittee members have privately said it will be extremely hard to "win the peoples' understanding" of the need to build more nuclear power plants, especially in densely-populated areas.

Although commission scientists point out that there have been no serious reactor accidents, enough incidents have occurred to stimulate public anxiety. One reactor, for example, has been operating at only four-fifths capacity for over two years since an inspection revealed radioactive primary coolant leaking into the secondary coolant.

The Japanese have experienced radiation problems with both boiling water reactors and pressurized light-water reactors, and operating rates have ranged from only 30 per cent to a high of 75 per cent. Most of the problems have been related to stress-assisted chemical corrosion which causes flaws and cracks.

The public opposition to nuclear power was further

strengthened in April of this year when ten employees of the Tokai Station were accidentally exposed to low-level radiation at the research center's fuel reprocessing plant.

Japanese officials concede there has been no adequate means developed for transporting and disposing of radioactive wastes, nor for moving the fuel to and from the reprocessing centers.

The existing reactors are producing more than 7,000 cubic meters of wastes each year, which are piling up at the power stations, mixed with concrete in drums. Some officials propose that these drums be dumped in the sea or used in landfill, but Science and Technology Agency scientists warn this would be dangerous because the wastes will outlast the drums.

Meanwhile, public health officials have detected radioactive elements in plants and shellfish near a nuclear facility at Tsuruga in Fukui on the Japan Sea. The level of radioactivity is far below international standards, but the question is whether it will rise in the future.

Japan also has an extraordinarily large plutonium production capacity, estimated at 1,000 kilograms per year. If nuclear power expands as planned, this will reach 14 tons by 1990, giving Japan a cumulative total of 80 tons of plutonium by that time, an amount sufficient to produce thousands of atomic bombs of the size of the device dropped on Nagasaki.

Some Japanese scientists warn that government assurances that nuclear plants are safe in case of earthquakes are not very convincing.

All this means that nuclear power development in Japan is beset by many obstacles that will significantly slow the country's program.

**South Korea**—South Korea plans to complete nine nuclear plants supplying 40 per cent of its electricity needs by 1986. The country's first nuclear plant—a 595-MW Westinghouse reactor—is due on stream at Kori near Pusan in late 1976. Negotiations continue with Westinghouse for a second 600-MW plant, and South Korea is looking at Canadian Candu reactors for a third and fourth plant.

But the country has also run into problems. First, there is trouble obtaining a reliable supply of uranium; then the U.S. Export-Import Bank has held back on financing the second plant pending better controls on the use of plutonium; also the U.S. Congress put pressure on South Korea to ratify the Nuclear Non-Proliferation Treaty, which it did in April.

While the South Koreans will probably proceed with the four planned plants, there are likely to be many delays along the way. The environmental issue has not yet surfaced.

**Hong Kong**—Nuclear power has been talked about for the British colony of Hong Kong, but it is not likely to happen during the next ten years. To install a big enough plant to be economical, Hong Kong would



probably have to reach a power-sharing agreement with China. That is not in the cards at the moment.

If and when serious efforts to go nuclear begin, it's almost certain to raise opposition from environmentalists who are becoming increasingly vocal in Hong Kong.

**China**—Virtually nothing is heard from the People's Republic of China about its nuclear power plant program. But China specialists are certain Peking is working in this area and, given its nuclear weapons program, has the ability to develop its own power reactors.

China's interest is partly reflected in the fact that during the past two years, a number of delegations have been sent abroad to study nuclear plants, including those in Japan, Canada and Europe.

While China is increasingly concerned about the environment, the nature of its society would rule out any public opposition to nuclear plants.

**The Philippines**—In reaction to the oil crisis, the Philippines government signed an agreement with Burns & Roe Inc. of the U.S. in April 1974, for a feasibility study for a 600-MW nuclear power plant. In June of last year the country signed an agreement with Westinghouse for two reactors that would become operational in 1982 and 1983. But finding financing has proved difficult and may delay the program. So far, environmental concerns are minor.

**Thailand, Malaysia, Singapore**—Talk about a nuclear program has existed in Thailand for some time, and in the wake of the oil crisis it appeared the country was ready to move ahead with a 500-MW plant. But now the program is being delayed due in part to financing problems and a decline in the rate of growth of power demand.

Preliminary studies are underway in Malaysia for a nuclear plant during the 1980's, but plans are not yet finalized.

**Indonesia**—Although it is an oil exporter, Indonesia is also studying nuclear energy as a means of diversifying. The government's nuclear council (BATAN) is awaiting the results of a marketing survey by the International Atomic Energy Agency. The report is expected to recommend that 80 per cent of the electricity on Java be supplied by nuclear power by 1990.

But other priorities and budget problems are believed to make this an unrealistic schedule. BATAN officials told *World Environment Report* they prefer the Canadian heavy water reactor.

**India**—This is the only Asian country besides Japan that already has a nuclear power plant in operation. India's first plant, a 400-MW unit built with U.S. aid, started up in 1969 near Bombay. A second plant, with two reactors, provided by Canada, is in partial operation.

Canada has refused to help with a third plant near Madras because of India's alleged use of plutonium from one of the other Canadian reactors for a nuclear weapons test last year.

The third plant is under construction, and work on a fourth, which is to be designed and built without foreign help, began in January of last year. The first unit of the fourth plant, which consists of two 220-MW pressurized heavy water reactors, is due to come on stream in 1981, and the second in 1982.

The Russians are also involved in the Indian nuclear program, reportedly working with India on a fast breeder reactor.

The major concern with India's nuclear program is the government's refusal to sign the Nuclear Non-Proliferation Treaty.

**Pakistan**—A 123-MW non-power reactor build with Canadian aid is operating at Hawkes Bay near Karachi. The country is planning 15 nuclear power plants over the next 25 years. A 500-MW power plant is scheduled to start up in the Karachi area this year. A second 400-MW plant capable of desalting 100 million gallons per day of sea water is planned for the Karachi area.

Pakistan is one of the few Asian countries with uranium deposits, and interest in developing them is growing. No environmental concerns have appeared.

## While All's Quiet Israel Moves To Build Nuclear Network

**Big Plans in Israel**—In the Middle East, Israel is formulating a master plan to build more than a dozen nuclear plants and eliminate its dependence on other forms of energy.

The plan calls for at least 15 large nuclear power stations along the Mediterranean coastline by the year 2000, according to Dr. Shlomo Brovender, deputy director of the Environmental Protection Service. Proximity to the sea is necessary for heat disposal, Brovender adds, but "we chose isolated sites between Gaza and Ashdod and between Netanya and Haifa."

The government has already given the go-ahead for one 600-MW plant, expected to produce 15 per cent of the country's needs by 1984. When the other stations are completed, according to Brovender, 90 per cent of the country's electrical needs will be filled by nuclear power.

A team of Israeli scientists and environmental experts began drawing up the plan in 1970, according to Brovender, and it had nothing to do with former President Nixon's pledge to supply the country with a reactor.

Now that U.S.-Israeli talks on the pledge have been suspended, Israel plans to buy its first reactor for \$500 million. The U.S. is expected to supply enriched uranium.

(Continued page 8)



## Briefs . . . .

### Impact of Tourism on Environment is Studied

The Council of Europe and the West German government are sponsoring a conference this week in Hamburg to study the impact of mass tourism.

About 150 experts and scientists from 23 European countries are seeking practical ways to develop leisure pursuits in coordination with the need for conservation.

Two of the three reports on which the conference is based deal with areas in which summer visitors do the most harm—coasts, lakes, rivers and mountains. The third report is devoted to nature conservation in thickly populated regions. It considers such problems as the impact on green belts of urban populations spending leisure time in the country.

The reports are based on about 30 case studies which include beaches surrounded by concrete, ski trails that destroy pasture land, solid waste disposal dumps, speed boating, high-mountain roads, and the other side-effects of tourism that destroy the countryside.

Conclusions reached at the Hamburg conference will be sent to the next conference of European Environment Ministers, which is being organized by the Council of Europe for next spring in Brussels.

### Mexico Charters National Ecology Institute

A National Institute of Ecology has been chartered in Mexico City to conduct research and serve as the official consulting body on all ecological matters for the capital city and federal agencies. The institute will promote scientific and technological developments, engage in basic and applied research, and train personnel.

To be housed in a new building in Chapultepec Park, the Institute will be financed by the National Science and Technology Council. Signatories to the institute's charter were Mexico City Regent (mayor) Octavio Senties and Gerardo Bueno Zirion, director of the council. Chairman of its board is Secretary of Education Victor Bravo Ahuja.

Fulltime scientists and researchers will staff the new institute, according to Bueno Zirion.

### New French Air Pollution Agency Created

Premier Jacques Chirac has announced that France will create a new agency charged with controlling pollution of the atmosphere. He said that within the next three years all cities of more than 100,000 inhabitants and having major industrial concentrations will be equipped with air pollution monitoring systems. In the same period of time, the government will establish the new agency to enforce controls.

Chirac added that the French parliament will soon be asked to act on a bill establishing a framework for air pollution controls, and that the draft provides for the new agency.

### Sao Paulo Turns Attention To Air and Soil Pollution

The Pollution Control Agency of Sao Paulo—Latin America's largest and probably most polluted city—has been expanded to include air and soil pollution.

Previously the agency—State Company for the Technology of Basic Sanitation and Defense of the Environment (Cetesb)—had jurisdiction only over water pollution. At his inauguration, the new president of the agency, Renato della Togna, said "The development of our state and country requires constant scientific, technological and operational support, always more efficient and complex."

### Big Desalting Plant Starts Up in Hong Kong

In Hong Kong the world's largest desalting plant is now operating on a trial basis.

The first of six units are pumping at full capacity—6,666,000 gallons a day—into the Tai Lam Chung Reservoir. The trial period will last six months.

When fully operational, the desalter's six units will be capable of producing 40 million gallons of water daily.

### Environmental Protection Added To Greek Constitution

Environmental protection has been institutionalized in Greece through inclusion in the country's draft constitution.

According to the article, "the protection of the country's natural and cultural environment is the obligation of the state." This gives the state power to issue appropriate laws.

The article was passed unanimously by the Greek parliament, which is now debating the country's draft charter.

The move was seen as reflecting recent mounting pressure on the government from private environmental groups to increase its activity in environmental issues.

### Propose District Heating For Central Dublin

Engineers of the Irish State-Electricity Supply Board (ESB) have proposed a \$61 million district heating system for central Dublin that could reduce fuel imports as much as \$12 million annually and reduce air pollution.

The proposed system, which would be based on waste power-station heat, was described last month at the inaugural meeting of the District Heating Association of Ireland. The group will be promoting



the concept for use in all kinds of urban settings.

The centralized system could be implemented by changing the design of power stations and upgrading the by-product. It would use steam to generate electricity and then condensation to release the heat, which would be recovered and distributed through a network of underground pipes.

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### Brazilian Electric Car

It began with a Brazilian's dream of a mechanical golf caddy, and today Rodrigo Lacerda Soares Netto is the owner of a company in Sao Paulo that has produced about 500 electric cars called Kadiketo.

So far the cars are being used mainly on golf courses, in some factories and a few airports. But Netto hopes to obtain government financing for research to make the cars adaptable for urban use. He sees the Kadiketo as a second family car used to take children to school, for shopping, and as a delivery vehicle. It could also have practical applications in industrial plants, hospitals, airports and parks.

The Kadiketo makes no noise, emits no pollutants and is economical to drive, Netto says. It can do a 35 to 96-mile run on one battery charge, which costs 13 cents.

The major problems with the three-wheel vehicle are its purchase cost and weight. The retail price of the Kadiketo is about \$3,000, and the car weighs 1,760 lbs.

It operates on a 1.5 h.p. electric engine run on a half dozen six-volt batteries with a total capacity of 180 amps. The car's automatic battery booster can be plugged into any electric outlet.

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### Sewer System for Brazilian City

With the completion of the \$42 million first stage of a sewage pro-

ject, the northeastern Brazilian city of Salvador da Bahia (population over one million) ceases to be the largest western urban center without any sewage service.

The 230 km of sewage collection pipes that have been installed will service about half of the population. Later stages of the project will eventually provide sewage collection for the entire city.

The collected sewage is taken by pipe to an ejection station at sea, where the ocean currents carry it away.

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### Oil Is Still Controversial in Ireland

After a third oil spill (*WER*, April 14, p. 2) the top management of the Gulf Oil terminal on Whiddy Island, Bantry Bay, Ireland, has been replaced in what is termed a major shake-up of senior executives.

The March spill—a minor one compared to the two previous ones—amounted to only 240 gallons.

In a related development, the controversy over a proposed oil refinery in Dublin Bay is once again active.

The chairman of the East Irish Coast Tourism Organization—a quasi-government body—has said the refinery would be unwelcome.

J. C. Hogan said the refinery would have a bad effect on tourism because of almost certain pollution.

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### Haiti Looks to U.S. and Others for Food Relief

Haiti's Minister of Foreign Affairs, Edner Brutus, has declared a national food emergency and asked the U.S. and other governments for help.

According to Brutus, the hardest hit portion of the country, which has suffered a seven-month drought, is the northwest peninsula, an area of nearly 3,000 square kilometers with a population of more than 300,000.

The American Embassy here immediately released 1.2 million

pounds of emergency foodstocks, enough to feed 120,000 people for three months, and promised an additional 4.5 million pounds.

According to Dr. Victor Larouche, head of the Haitian Red Cross and chairman of the disaster committee, there have been no human deaths from starvation as yet, only animals. He added that a survey is underway to determine if relief is needed in other sections of the country.

Several private U.S. relief agencies have offered facilities for storage and distribution, and the diplomatic community has offered 3,000 tons of cereal grains. The Republic of China, through its agriculture mission, has released a quantity of rice, and the Netherlands is shipping grain flour and milk products. The United Nations is also surveying the situation.

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### Sri Lanka Law Is Not Saving Sea Turtles

Sri Lanka's navy is helping enforce the island nation's law against fishing for sea turtles.

The sea turtle was declared protected in June 1972, but the authorities permitted a two-year moratorium during which government officials have attempted to educate fishermen about the new legal implications.

Despite the new law and the end of the moratorium, turtle fishing and egg harvesting have increased substantially, with the slaughter taking place in several coastal areas. Live turtles are transported for long distances to places where the animals' flesh is greatly relished.

Sri Lanka's Wild Life and Nature Protection Society says a number of turtle varieties are threatened with extinction.

Commodore Basil Gunesekera, commander of the navy, told *World Environment Report* that, although the protection ordinance does not empower the navy to act on the matter, "we will apprehend violators and turn them over to the police."



## Nuclear Energy Report *(continued from page 5)*

Brovender heads a task force studying the environmental impact of the nuclear plan. "We are studying the problems of thermal pollution, nuclear waste, radiation and possible accidents," he told *World Environment Report*. "When the master plan is completed, nothing will have been overlooked."

Israel already has two small nuclear reactors, one in the Negev Desert and the other outside Tel Aviv. They are not used to produce power, but all other details are shrouded in secrecy.

**Kuwait**—Oil-rich Kuwait is holding preliminary talks with Bahrain and Saudi Arabia to consider nuclear power stations and nuclear desalting plants. The government formed a Kuwait Atomic Energy Commission earlier this year.

According to Abdullah Alghanim, Kuwait's minister of electricity and power, the country is interested in nuclear power because it wishes to conserve its oil supplies for export. Kuwait does not have enough natural gas to supply all its power needs. If nuclear power is developed, the natural gas will be diverted for industrial use.

The minister dismisses concern about the environmental problems of nuclear power as a "psychological fear against nuclear pollution."

## Environment Takes Back Seat In Latin American Nuclear Plans

In the Western Hemisphere, apart from the major activities of the U.S. and Canada, Mexico expects to derive as much as 65 per cent of its total power from nuclear energy by the year 2000. Their first nuclear electric plant is scheduled for first-phase completion in 1979.

The plant, a two-reactor General Electric system with a capacity of 1,300 MW, is being built at Laguna Verde, 200 miles east of Mexico City, a site chosen because it is relatively free of earthquakes.

Mexico plans 25 more similar plants to reach a total output of 15,000 MW, according to Francisco Javier Alejo, national priorities secretary.

Intensive exploration for uranium deposits is underway in Mexico, and proven reserves of 4,000 to 5,000 tons have been found in the north.

There has been little speculation about environmental or health threats of nuclear power. The desire for additional power sources in Mexico is now much stronger than fears of possible side effects.

**Brazil**—While there are no nuclear power plants in Brazil yet, government planners call for spending \$30 billion by the end of the century to develop uranium sources, enrichment plants, and nuclear power stations.

Tentative government plans call for about 20 power

plants by the year 2000 supplying 10,000 MW. The first station is under construction in Angra Dos Reies, on the coast 100 miles south of Rio. The two-loop, 630-MW plant is expected to go into operation in 1977. Two more 1,200 MW power stations are planned for the same location.

Westinghouse is supplying the Angra reactors, but this year the Brazilian program has taken a conscious swing away from U.S. suppliers. An agreement has been negotiated with West Germany to supply aid in building eight power plants, a conventional uranium enrichment plant, a pilot fuel reprocessing plant, and a jet nozzle enrichment plant.

Although individual scientists have expressed concern about the threat of nuclear pollution in Angra dos Reies, the government is pressing ahead and will say only that results of tests in the area have been satisfactory. Tests have been conducted in the area since 1973 by university research teams to gather data that will provide comparative figures on environmental conditions before the plant starts up.

The feeling in government circles seems to be that as the nuclear plant is imported, the pollution control methods will also be imported.

## Many African Nations not Equipped To Deal with Environment Issue

**Africa Interest**—The United Nations Development Program is providing advisory posts, fellowships, equipment and organized training programs in African countries. Last year, UNDP held a training program for radio-isotope technicians from English-speaking African countries.

In Ghana, the government has appointed a committee to review the atomic reactor project at Kwabenya, near Accra, which was stopped following the military coup of 1966. The reactor program was one of several Soviet-financed projects halted by the first military rulers as too expensive or unnecessary.

So far, little or no regard has been paid to possible environmental hazards related to the project. Ghana's pollution control regulations are primitive and ineffectual, and the Environmental Protection Council knows little about the nuclear pollution issue.

In South Africa, however, the government has begun operation of a pilot plant to enrich uranium for nuclear power reactors by a new method that could put the country into competition with the U.S., France and the Soviet Union for the burgeoning nuclear fuel market. South Africa is the world's third largest uranium producer.

JRM

The following correspondents contributed to this roundup on nuclear power: Jonathan Broder, P.K. Cobbinah-Essem, A.E. Cullison, Musa Dajany, David Fouquet, Katherine Hatch, George Hawrylyshyn, Henk Kersting, William Mahoney, Alan Massam, Arthur Miller, Vittorio Pesciallo, Judy Bird Williams.





# World Environment Report

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## Berthoud and Frosch Are Leaving Their UNEP Posts

**NAIROBI**—Two top officials of the UN Environment Programme (UNEP) are leaving for other assignments within the next few weeks.

Dr. Robert A. Frosch, assistant executive director in charge of programs, is taking a post at the Woods Hole Oceanographic Institution, Woods Hole, Mass. Dr. Frosch, a former assistant secretary of the Navy for research and development, has been with UNEP for two years.

Paul Berthoud, assistant executive director for the Environment Fund and management, is rejoining the UN Conference on Trade and Development (UNCTAD) in Geneva. A Swiss citizen, Mr. Berthoud has headed the Fund since its inception in 1973 (*WER*, March 17, p. 4).

There is no word yet on successors for the two officials, but it is understood an intensive search by various governments is underway to find suitable replacements.

## French Cabinet Takes Steps To Control Growth in Paris Region

**PARIS**—The French Cabinet has taken steps to slow and control growth of the Paris region.

The new program is in four sections: creating more green areas; slowing population growth; encouraging and controlling "new cities" or "satellites;" cutting back on industrial expansion and office space construction.

The office of Premier Jacques Chirac will soon issue directives protecting five new "zones of nature," or green areas. The Cabinet created a new Regional Green Space Agency to oversee the project in cooperation with local prefectures.

To slow population growth, the Cabinet called for a "voluntary policy." The Paris region now has 10.2 million inhabitants, and projections are for 12 million by 1985 and 14 million by the year 2000. The Cabinet decided this growth should be held to 11 million by 1985 and 12 million by the end of the century.

The Cabinet decided to grant priority to the develop-

ment of "satellite cities" surrounding Paris to bring them to their optimal size as quickly as possible, while simultaneously balancing population growth in the entire region. The new cities are expected to absorb half the population growth in a manner that will facilitate city planning, common transport and access routes. The Cabinet approved new autoroutes to serve these mushrooming satellites.

On construction, the Cabinet agreed on stricter controls over new projects, especially office buildings. The increase in new space will be limited to 700,000 square meters yearly, down from the previous 950,000. One third of this will have to be built in the new cities, up from the previous 20 per cent. Only 200,000 square meters of new office space will be allowed in Paris itself over the next five years.

On industrial growth, the Cabinet set limits on the size of storage depots, and declared that two-thirds of future "industrial zones" will have to be located within the new cities. A total of 1,000 hectares of industrial zones are projected for the new cities. Centralized industries will be encouraged to decentralize.

Because such planning affects traffic problems, the Cabinet also set up a special group to study this issue.

Meanwhile, Paris regions officials have announced plans for this year that include two new parks in the Oise Valley, opening or improving three public forests near new cities, opening 20,000 square meters of new green areas within Paris itself, opening of 16 kilometers of new superhighway, opening of new rail terminals at the new cities of Evry and Saint Quentin en Yvelines.

WILLIAM MAHONEY

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## The Lawless Sea: Wait Til Next Year

**NEW YORK**—The only clear decision to come out of the recent Geneva Law of the Sea Conference appears to be to reconvene next spring in New York.

The Conference closed May 9 with a plea from Conference President H. Shirley Amerasinghe of Sri Lanka that all states refrain from taking unilateral action that might jeopardize future global agreement regarding pollution, exploitation and navigation of the seas.

A "single negotiating text" was issued as a working paper to facilitate negotiations. It represents one step closer to world agreement, but many environmentalists think the step is not nearly large enough.

"We are very disappointed that more progress was not made," said Patricia Rambach, international program officer for the Sierra Club. "But the Conference is not the only forum for agreement." Rambach told *World Environment Report* that the Sierra Club is specifically interested in regional agreements and talks like the Mediterranean talks held in Barcelona earlier this year (*WER*, Feb. 17, p.1), and that they represent a very "healthy sign." She said the Sierra Club would support regional agreements to clean-up the oceans.

"We are distressed that the Law of the Sea Conference has been turned into legal one-up-manship

rather than a forum for dealing with maintaining a healthy ocean," Rambach said.

Committee Three of the Conference, the committee devoted to environmental considerations, did come up with a 25-page working document listing possible avenues of agreement to be used as a basis for further negotiations.

Many environmentalists believe that the pollution issue got marooned in the third committee of the Conference, permitting environmental considerations to be overlooked by Committee One dealing with exploration and exploitation of the seabed resources, and Committee Two dealing with economic zones.

Indications are that a lot of negotiating and discussion will occur between now and reconvening of the Law of the Sea Conference here next March. The between-session negotiations are expected to take place among nations on a one-to-one basis. Conference President Amerasinghe does not believe that final agreement will be reached at the eight-week March, 1976 session. It is likely that a second 1976 session will be voted at the New York Conference.

Asked if he was personally disappointed with the results of the Geneva session, Amerasinghe said that, in a sense, he was. He had expected more negotiations between the various interest groups rather than within them. SD

## Wildlife Treaty Comes Into Force

**MORGES, Switzerland**—On the first of July, the Convention on International Trade in Endangered Species of Wild Fauna and Flora will go into force. This will mark the culmination of years of work. The International Union for Conservation of Nature (IUCN), based here, first proposed the convention at its General Assembly in Nairobi in 1963.

The convention was given new impetus by the UN Environment Programme after the 1972 Stockholm Environment conference.

The convention was opened for signature at a Washington conference in 1973, and it has now been signed by 57 of the 80 nations that attended that meeting. Ten of these—the US, Nigeria, Canada, Switzerland, Tunisia, Sweden, Cyprus, Ecuador, Chile, and Uruguay—have ratified the treaty, and one more—the United Arab Emirates—has acceded directly.

The 11 ratifications/accessions are one more than needed for the convention to come into force.

The international convention does not ban international trade in endangered species outright, but restricts it to a level that will not threaten survival. That level is zero for many species covered, but the convention provides that if a species recovers sufficiently, trade in it may be resumed.

The species covered by the convention are grouped into three appendices. The first includes all species threatened with extinction that are or may be involved

in trade. The second includes species that are not necessarily threatened by extinction, but that may be unless trade is rigorously controlled. The third appendix includes all other species that any state party to the convention already protects in its own territory and requires cooperation by other nations to regulate trade.

A species in the first appendix or any product derived from it may be exported only if the designated national scientific authority declares such export will not be detrimental and that the specimen in question was legally obtained. Moreover, the export must not be primarily for commercial purposes. These species may be imported only if the exporting country has granted a permit.

The controls for the second and third appendices are not so strict, but are designed to prevent species from diminishing to the point where they become candidates for the first appendix.

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## Pulp and Paper: Environment Needs Are Complex and Varied

**NEW YORK**—The United Nations Environment Programme (UNEP) should assume a role in gathering and disseminating information on how different countries regulate the environmental impact of the pulp and paper industry. UNEP should use this information to help developing countries determine the best trade-offs among types of pollution, levels of emissions and types and costs of pollution control equipment for their own pulp and paper industries.

These are two of the 20 findings that emerged from a UNEP seminar held in March at the World Bank headquarters in Paris to discuss environment and conservation in the international pulp and paper industry. The report on the seminar was made available here last week.

Fifty-three officials, executives and experts attended the seminar, which was coordinated by UNEP's Office of Industry.

A theme that ran through the seminar, according to the report, was that the pulp and paper industry is diverse and complex and that social priorities, including requirements for pollution control and economic development, vary tremendously from country to country. Therefore, the delegates supported the concept that environmental standards must be essentially national decisions.

However, the seminar also stressed the need for greater dialogue and exchange of technical information and information on regulatory systems, monitoring and analytical methods, recycling and legislative approaches.

The seminar participants suggested that UNEP, beyond assembling and disseminating information, should explore the possibility of joint research projects on advanced pollution abatement technology and devise a method whereby non-proprietary information generated by such research programs can be made available to developing countries.

UNEP is also urged to cooperate with the International Standards Organization and the joint Scandinavian paper industry task force in efforts to develop common monitoring and analytical standards. Also, UNEP should encourage governments and international agencies to recognize the importance of forest management, together with an environmentally sound pulp and paper industry, as a means of meeting growing paper needs while utilizing marginal agricultural lands for producing an important renewable resource, creating employment, stabilizing and improving the soil and regulating watersheds in certain developing countries.

Finally, the report recommends that UNEP extend its initiatives toward developing environmental health criteria to cover substances of concern to the pulp and paper industry.

UNEP's Office of Industry has recently moved into new offices in Paris at 17, rue Marguerite. Its director is Leon de Rosen, former Simca executive.

**Industry Program**—In a statement of Policy for UNEP's industry program, De Rosen summarizes the dominant concerns of the world community as protecting the ecosystem and conserving the resources of a vulnerable finite planet, while at the same time redressing the drastic imbalance between rich and poor societies in an effort that curbs excess and provides a decent level of food, goods and services to the majority of the human race.

Industry is central to the achievement of these two goals, according to De Rosen, not only as the exploiter and user of materials and creator of pollution and waste, but also as the most dynamic and flexible sector of the economy, able to mobilize capital, stimulate growth and provide employment.

He sees the priorities of UNEP's Industry Program as promoting non-waste and low-energy technology, assessing industry siting, assessing the pros and cons of synthetic versus natural products, studying and promoting technology transfer, assessing trade barriers, promoting a satisfactory work environment, assessing trends in resource use, promoting a planetary approach to managing non-renewable resources and promoting special multi-disciplinary studies or research programs in fields such as agriculture, energy and human settlement.

The Industry Program is planning future seminars with other major industry groupings, such as aluminum, motor vehicles and petroleum. JRM

## Guidelines Are Drawn As Dumping Convention Nears Ratification

**NEW YORK**—A UN study group has issued proposed guidelines for compliance with the UN London Ocean Dumping Convention of 1972. Twelve states have ratified the Convention. Three more ratifications are needed before it can go into effect. The study group was sponsored by GESAMP—Joint Group of Experts on the Scientific Aspects of Marine Pollution.

Until the London Convention is ratified, no global offshore dumping regulations exist. There are, however, regional standards currently in effect—such as US dumping laws and the Norway Convention of 1972 that applies mostly to dumping in the North Sea.

There are three annexes to the London Convention. One prohibits dumping of certain substances; the second requires permits for the dumping of some hazardous materials; the third requires an impact study be made prior to dumping any substances not mentioned in annex one or two.

The GESAMP study pertains to this third annex, according to Dr. Bostwick H. Ketchum who was on the GESAMP panel and is with the Woods Hole Oceanographic Institution in Massachusetts. (continued)



The Convention delineates what must be done by complying countries. The report is designed to tell states how to do it.

After the treaty is ratified by 15 states a committee will set official guidelines for compliance with the Convention. The GESAMP report will be presented to this committee for adoption.

The report says that under the London Convention dumping should be done in a manner that will minimize undesirable effects by:

—Ensuring maximum initial dilution through an appropriate means of disposal.

—Selecting areas where dispersive processes such as transport and mixing are active.

—Avoiding particularly sensitive environmental areas.

While offshore dumping represents a relatively small percentage of all pollutants entering the ocean, Dr. Ketchum told *World Environment Report* that it is a problem that "you can get a handle on." Onshore sources and airborne pollution represent by far the greatest amount of pollution entering the oceans, but Dr. Ketchum points out that it is difficult to get international acceptance of sanctions covering onshore

sources of pollution—a sensitive area of state domain.

Dredge spoils and sewage sludge constitute about 90 per cent of all material presently being dumped into the sea. Both can be contaminated by heavy metals, petroleum hydrocarbons, animal and vegetable fats, oils or chlorinated hydrocarbons. They may also introduce microorganisms—specifically pathogenic bacteria and viruses—into the sea.

One major loophole in the London Convention is that only the ratifying countries are bound by its terms.

At this time, the convention has been ratified by the United States, Denmark, Dominican Republic, Iceland, Jordan, Mexico, New Zealand, Norway, the Philippines, Spain, Sweden and the United Arab Emirates.

The major dumping nations are, as could be expected, the large industrialized powers, according to Dr. Ketchum. He said that the United States, Great Britain, and Germany are the three nations that are the largest offshore dumpers. Many countries' dumping practices are not currently known, he added. The United States, the only large-scale dumper to ratify the London Convention, already complies with similar regulations set by U.S. offshore dumping laws. SD

## Bahamas Seeks Control Over Its Archipelago Waters

*NASSAU, Bahamas*—A "crawfish war" is a distinct possibility here this summer, as the Bahamas prepares a unilateral declaration of control over its entire "archipelago waters." This would extend the island nation's jurisdiction well beyond the current 12-mile territorial and fishing limits and is expected to lead to confrontation with the Florida-based Cuban fishermen who hunt the Bahamian spiny lobster on the Bahama banks.

The Bahamas share with other archipelago countries—Fiji, Mauritius, Indonesia and the Philippines—the desire to control all internal waters lying within the outermost islands and to consider them virtually part of the landmass.

Bahamians argue that national identity, security, pollution and poaching are good enough reasons for seeking this control. The Bahamas feels so strongly about the issue that it is suggested that it hastened its independence in order to attend last year's Law of the Sea Conference in Caracas as an independent state.

But some of the world's most frequented sea lanes—the Northeast Providence Channel, the Mayaguana Passage, the Turks Island Passage and the Mauchoiri Passage—run through the Bahamas. The islands are only 50 miles from Florida and 20 miles from Cuba. The archipelago covers a land-sea area of about 90,000 square miles.

The Bahamian government would like to control these sea lanes and to charge the international commu-

nity with the expense of maintaining the lighthouse service formerly paid for by Britain.

The Bahamians are also concerned about pollution. They believe oil tankers flushing bilges within archipelago waters are beginning to affect the shoreline and beaches. The Bahamian government would also like to control any mining or other resource exploitation activities within the archipelago.

As for the fishing dispute, it is likely to come to a head this summer. Legislation has been passed authorizing the Ministry of Agriculture and Fisheries to make a move before the opening of the lobster fishing season on August 1. U.S. officials here find the move "embarrassingly similar" to action by the U.S. Congress in January 1974 in declaring the New England lobster a creature of the U.S. Continental shelf.

However, the Bahamas does not have much international support for its archipelagic principle because of the freedom of navigation issue.

As far as the United States is concerned, the Deputy Chief of Mission in the U.S. Embassy in Nassau, Rozanne Ridgway, has informed the Bahamians "If . . . the archipelago issue is used in such a way as to impede navigational freedoms, I must be blunt in stating my own view that the United States cannot and will not sacrifice those freedoms, which are a basic element of our national policy."

ELIZABETH NATHANIELS



## Cartagena Bay Is Still Polluted After Years of Study and Cleanup

**BOGOTA**—One of the loveliest bays in South America is still polluted by chemical wastes, sewage and oil spills despite a four-year cleanup campaign by government institutes and private citizens.

A vast waterway bounded by islands and palm-fringed beaches on the Colombian Caribbean, the Bay of Cartagena is the prime asset of a popular tourist resort. But today, over one-third of the harbor's waters are covered by a dark oil slick, and three-quarters of the bay is considered polluted.

Since tourism is Cartagena's principal source of income, local authorities are alarmed. But Colombia lacks the financial and human resources to clean up the bay. So after years of study and countless committees, the problem remains.

Once the chief port on the Spanish Main, Cartagena's harbor always suffered a certain amount of pollution, but serious damage began only with the advent of modern civilization. The bay is coastal headquarters for the oil industry in Colombia and home of the country's navy. The city itself dumps all of its sewage into the bay, and the principal native market uses it as a floating garbage dump for everything from rotting bananas to fish heads.

Then there are the local fishermen who use dynamite

to catch fish, sometimes only yards from the crowded beaches. Two of the city's finest colonial fortresses have been damaged by careless dynamiting.

The Colombian wildlife service, **INDERENA**, formed the first save-the-bay committee in 1962 with the cooperation of the navy, port authorities, the oil companies and the ministry of public works. Navy marine biologists undertook a series of studies that showed an alarming reduction in dissolved oxygen, which has reduced plant and fish life and threatens extinction of the mangrove oysters and the pink conch, source of livelihood for the nearby Rosario Islands.

**INDERENA** meanwhile undertook an educational campaign to stop Cartagenos from throwing garbage into the bay, and the port captain threatened fines of up to \$10,000 for any vessel caught leaking oil.

But the law enforcement agencies, the port captain and **INDERENA** have been legally powerless to collect fines. **INDERENA** has only two small motor boats, the police have none, and efforts to control the dynamiting have been fruitless, even in front of the police chief's bayside house.

Both the navy and the oil companies continue to pollute the bay, along with a large soda plant and tanneries that dump caustic and tannic acid into the waters. The pollution is now threatening the once-protected seaside beaches, where tourists now often find themselves swimming in oil slicks.

PENNY LERNOUX

## Brazil's Environment Program Shows Signs of Life

**BRASILIA**—After years of low priority, signs are increasing that the Brazilian government is beginning to take the country's environmental problems seriously. Next week the Ministry of the Interior and the Special Environmental Secretariat are sponsoring the first National Meeting on Protection and Improvement of the Environment here.

According to Interior Minister Rangel Reies, main topics at the meeting will be environmental experience in other countries, environmental criteria and standards, Brazil's serious pollution problems and directions for improving pollution control.

Attending the meeting will be environmental specialists, government officials, federal deputies, representatives of private industry and of other countries. Countries represented will include the United States, France, Japan, Mexico, Great Britain, West Germany, Sweden, Holland and the Soviet Union.

Brazilians hope the meeting will lay the foundation for a national pollution control policy.

Although Brazil has serious water, air and noise pollution problems, and is being rapidly stripped of its forests, it has no real environmental policy. Until recently, pollution problems were scoffed at by most Brazilians as something "the rich countries worry about."

At the UN Environment Conference in Stockholm in 1972, the Brazilian delegation was only a token one and was unprepared to participate in the substantive discussions.

Since then, all the environmental activity abroad has bolstered the campaign a few Brazilian conservationists have been waging, and the press has given them much attention. Several pollution incidents, culminating in the recent oil spill in Rio's Guanabara Bay (*WER*, May 12, p. 7), have made Brazilians aware of their environmental problems, and "ecology" is becoming a household word.

Ironically, Brazil does have strict conservation laws, but they are so strict in many cases they are not and cannot be enforced.

A good example is the request by a frustrated official in the south to use army troops to protect the country's forests and even its national parks from widespread illegal lumber and charcoal operations. Forest rangers don't have the resources even to begin the job.

There are many indications, besides next week's conference, that government officials are coming around to real action. Environmental organizations are being encouraged in all states, environmental courses are being created in universities, satellites are being used to monitor deforestation and strict urban development laws are being passed and enforced.

GEORGE HAWRYLYSHYN



## Briefs . . . . .

### Deforestation Raises Temperature At Cuernavaca, Mexico

Immoderate cutting of trees in the forests surrounding Cuernavaca, Mexico—known as the "City of Eternal Spring"—has raised the temperature by 20 degrees, according to Mayor David J. Gonzalez.

Temperatures normally range from 75° to 79°F in Cuernavaca, located one mile above sea level on the edge of the tropics. But recently the readings have hit 93°F in the shade and a blistering 98°F in the sun.

"Never in recent times has it seemed so hot," the Mayor told *World Environment Report*. Long time residents concur.

An intensive planting and reforestation project has been undertaken in an effort to lower the heat.

### Deliberate Arson Charged In Greek Forest Fires

Greece's Undersecretary of Agriculture has charged that a rash of forest fires, particularly in the Athens area, represents "premeditated arson" by real estate speculators wanting to use the land for profit.

Kleovoulos Yanoussis said he will bring the issue before parliament in the form of a draft law.

Yanoussis' statement referred to the well-known practice in Greece of deliberately setting fires to forested areas where the law prevents construction. Elimination of the trees usually means automatic issuance of permits for land sales and construction, that result in high profits.

Yanoussis said that about 650 fires destroy nearly 25,000 acres of forest and grazing land annually. About 350 of these fires occur in the Athens region, burning about 5,000 to 7,000 acres.

This is the beginning of the hot summer months in Greece, and Yanoussis said he is expanding Greece's forest-fire fighting equipment and personnel in an effort to stop the devastation.

About 150 years ago, 39 per cent of Greece was covered by forests. Now, only 19 per cent of the countryside is forested, and reforestation efforts cannot keep pace with the destruction.

### High Mercury Levels Found in Brazil Waters

First laboratory tests of shellfish and water from the Bay of Todos-os-Santos near Bahia, Brazil, show a higher mercury content than found during the notorious Minamata incident in Japan.

In front of the Companhia Quimica do Reconcovo, where the mercury is being dumped into the sea, the shellfish contained 95mg of mercury per kilo, twice as much as the highest reading in Minamata where 20 years ago a whole village came down with mercury poisoning and 41 persons died.

Tests made of water near the chemical plant were also alarming, showing a mercury content 50 to 1,350 times higher than is considered safe.

To date there have been no reports of people suffering from mercury poisoning, and while a solution to the problem is being sought, the company continues to operate.

### Turtle Conservation Studied

The Bahamas National Trust is collaborating with leading conservationists to study the life habits of the Caribbean Green Turtle—a species endangered by overfishing.

Dr. Archibald Carr of the University of Florida, well-known for his pioneering conservation efforts in the Caribbean, will spend six months on the island of Inagua in the remote southern Bahamas this

year. The project will be funded by the Caribbean Conservation Corporation, a non-profit foundation. Both the Bahamas National Trust, which has statutory powers for the formulation and extension of conservation policies, and the Ministry of Agriculture and Fisheries are actively involved.

Turtles were once so plentiful in the Caribbean that Columbus' sailors could not sleep at night because of the constant banging of turtle shells against the ship's hull.

Other projects carried on by the Trust include a study of the iguana population on the island of Andros, the largest in the Bahamian archipelago, and protection of flamingoes and the rare White-Crowned Pigeon.

### Britain Creates Board To Oversee Offshore Drilling

A new Offshore Energy Technology Board (OETB) has been established by Great Britain, according to the British Secretary of State for Energy.

The Board will advise Secretary Eric Varley on research and development programs and will take over offshore oil and gas research from the two-year-old Ship and Marine Technology Requirements Board.

OETB will be chaired by the chief scientist for the Department of Energy, Dr. Walter Marshall. Inquiries about OETB and offshore operations may be addressed to the Department of Energy, Thames House, South Millbank, London SW1P 4QJ (Tel. 01-222-7000).

### Australians Put Freeze On New Mining Project

Australia's Fraser Island mining venture (*WER*, April 28, p. 4) has been frozen by the federal Labor party caucus in a move with far-reaching implications.

The caucus overrode Minerals and Energy Minister Rex Connor,



who had earlier been voted number one man in the caucus, by barring issuance of export permits to DM Minerals Ltd. (a consortium of Dillingham Corp. of the US and Murphoyres of Australia.).

Approval to mine had been given in December, only four days before environmental legislation became law. Fraser Island is rich in heavy mineral sands, but is considered a fragile ecological resource. Australian environmentalists charged the approval of export permits was a sell-out of the new law.

The effect of the new caucus vote is to hold up the export permit until an environmental impact study, due to start in June, is complete.

The Australian Labor government faces acute embarrassment if the environmental study comes out against the mining project, because it had given its word of approval to the mining consortium. In the Australian system, the ruling party caucus can establish policy.

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### Rio Law Controls New Building Height

A new bylaw limits the height of new construction in Rio de Janeiro. Maximum height for buildings outside the city center is 18 stories under the bylaw, and apartment buildings facing the beach or open areas will have special limitations to prevent casting a shadow over public areas.

Also prohibited are buildings on hills over 100 meters above sea level, in order to preserve the natural contours of the Rio landscape.

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### Satellite Monitors Tree Cutters in Brazil

The Brazilian Forestry Department is conducting a test project to control slash-and-burn jungle clearing by use of satellite photos.

Officials express confidence that the photos, sent every 18 days by the ERTS-2 satellite, will make it

possible to keep tabs on bush clearing activity throughout the vast country.

The satellite photos have an error margin of only 25 meters. These photos will be processed by computer to pin-point areas of bush slashing, and to help determine whether the activity is legal.

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### French Draft Tighter Industrial Pollution Controls

The French Cabinet has approved the draft of a law drawn up by the Minister for the Quality of Life, Andre Jarrot, that would provide tighter control over industrial firms causing pollution.

The draft extends the area of application of a 1917 law to the fields of public health, nature and the environment. It would apply to all industrial firms, even if they are government-owned or collectives established by local authorities.

The draft law would give the Ministry for the Quality of Life authority to penalize firms found dangerous, unsanitary or causing other environmental problems.

Violations would be punishable by fines ranging from about \$500 to \$5,000. In the case of repeated offenses, owners or top executives could be imprisoned from two to six months, and fines could go as high as \$120,000.

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### Nominations Open for Wildlife Award

Nominations for the second \$50,000 J. Paul Getty Wildlife Conservation Prize are now being accepted. The deadline is November 15, 1975.

The prize will be awarded to a pioneer in the field of conservation for outstanding achievement. Candidates will be considered for a number of accomplishments including the conservation of rare or endangered species and habitats, the increase of public awareness of the

importance of wildlife and nature, or the establishment of legislation or of an organization or society of unusual importance to wildlife conservation.

The prize was awarded for the first time in January to Peruvian conservationist Felipe Benavides for his successful promotion of international cooperation to save the endangered vicuna and other Latin American species and natural habitats.

Nominations should be accompanied by a full description of the candidate's achievements and sent to World Wildlife Fund-U.S., 1319 18th Street, N.W., Washington, D.C. 20036.

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### France Begins Channel Oil Drilling

The French-owned Elf-Aquitaine oil company has begun exploratory drilling in the Sea of Iroise in the western arm of the English Channel. The company plans to put down three probes and hopes to have enough information by the end of this year to make a decision regarding further efforts.

Britain and France are in dispute over territorial rights in the Channel. The disputed area covers about 3,800 square miles running across the western end into the Irish Sea. The countries will abide by the findings of a five-person arbitration team, but in the meantime continue drilling in undisputed areas near their respective coasts.

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### Indonesians Worry About Soil Erosion

Indonesian government officials are beginning to show concern over serious soil erosion caused by the timber industry's felling of trees. But there are no indications yet of any new measures being taken to deal with the problem.

Uncontrolled cutting of trees is causing serious erosion that results



in floods and the destruction of marine life in rivers downstream.

In East Kalimantan, Indonesia's largest timber producer, 350,000 people depend on forest resources for a living. Measures designed to control tree cutting have been difficult to enforce because of inadequate funds, facilities and labor.

### North Korea Builds Huge Irrigation Network

According to reports from North Korea, an extensive irrigation system has been built over the past 15 years to control floods and drought.

Large-scale irrigation projects in major farming areas have been com-

pleted with state funding. Medium and smaller-scale projects have also been completed, resulting in an extension of 5,713 miles of irrigation channels.

Thanks to extensive forestation projects, there is no denuded land in the entire country, North Korean authorities claim.

## Calendar

June 2-4—Tenth Meeting of the African Regional Group of the UN Advisory Committee on the Application of Science and Technology to Development, Addis-Ababa, sponsored by Economic Commission for Africa.

June 2-6—Encontro, first Brazilian national meeting dealing with protection and improvement of the environment, Brasilia.

June 2-6—International Symposium on the Combined Effects of Radioactive, Non-Radioactive and Thermal Releases to the Environment, Stockholm.

June 4-6—International Conference on Environmental Policies, Frostauallen, Sweden, sponsored by Nordic Council.

June 5-8—"Earthcare," conference on the preservation of natural areas and urban open spaces, New York, sponsored by Sierra Club and National Audubon Society.

June 8-12—National Strategies for Environmental Control and Human Development, Bled, Yugoslavia. Sponsored by YMCA Center for International Management Studies, Contact: Agnes Pall, 291 Broadway, N.Y., N.Y., Telephone 212-374-2084.

June 9-13—European Technical Conference on Leisure and Natural Conservation, Strasbourg, Sponsored by Council of Europe.

June 9-13—Third Session of Group of Experts on Aspects of Water Quality and Quantity, Geneva, sponsored by Economic Commission for Europe.

June 15-20—Panel on International Cooperation in Air and Environmental Control Efforts, Boston, sponsored by Air Pollution Control Association.

June 16-20—Advisory Group on Isotopic Tracer-Aided Studies of the Mechanisms of Inland Water Eutrophication, Vienna, sponsored by International Atomic Energy Agency and Food and Agriculture Organization.

June 16-20—Fourteenth Session of the European Committee for the Conservation of Nature and Natural Resources, Strasbourg, Sponsored by Council of Europe.

June 17-19—Seminar on Industrial Environment, Norway, sponsored by the Nordic Council.

June 30-4 July—International Symposium on Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environment, Otaniemi, Finland.

July 1-7—Scientific group on Methods of Monitoring Carcino-

genic Chemicals in the Environment, Geneva, sponsored by World Health Organization.

July 9-12—Symposium on the Changes in the North Sea Fish Stocks and Their Causes, Aarhus University, Denmark, sponsored by International Council for the Exploration of the Sea.

July 14-17—Seminar on the Management of the Transfer of Industrial Technology, Geneva, sponsored by Economic Commission for Europe.

July 14-18—Expert group on Center for Marine Science and Technology, Lagos, Nigeria, sponsored by Economic Commission for Africa.

July 14-18—Working group on Oceanographic Data Exchange, New York, sponsored by UN Educational, Scientific and Cultural Organization and Intergovernmental Oceanographic Commission.

August 1-11—International working meeting on Teacher Training in Environmental Education and Conservation, Caerleonshire, U.K., sponsored by International Union for Conservation of Nature and Natural Resources.

August 18-20—Specialized Conference on Nitrogen as a Water Pollutant, Copenhagen, sponsored by International Association on Water Pollution Research.

August 18-23—Symposium on Long-term Climatic Fluctuations, Norwich, U.K., sponsored by World Health Organization, International Association of Meteorology and Atmospheric Physics.

August 24-29—Preparatory Committee, Conference on Human Settlements: Habitat, New York, sponsored by UNEP.

August 24-6 September—Symposium on Methods of Chemical Investigation of Natural Waters sponsored by International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

August 26—Symposium on the Large Scale Modification of Fresh Water Systems and Their Effects on Oceanic Environment, Grenoble, sponsored by International Association for the Physical Sciences of the Ocean; International Association of Meteorology and Atmospheric Physics; and International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

For further information, contact the Center for International Environment Information.





# World Environment Report

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MAY 12, 1975

## UNEP Meeting: Governing Council Seeks Action Programs

**NAIROBI, Kenya**—To define areas in which more information and research are needed about environmental problems is one thing, to get down to practical work in specific and well-defined projects is another.

According to Christian A. Herter, Jr., deputy assistant secretary for environment and population affairs in the US State Department, the keynote of the just-completed Third Governing Council of the United Nations Environment Programme (UNEP) has been the need to move from the first stage to the second as fast as possible.

The Governing Council met here at UNEP's headquarters from April 16 to May 2.

"We are not moving nearly fast enough," Herter told *World Environment Report*, "and many developing countries as well as the industrialized world feel it is high time to get over the planning and get on to some action."

Herter pointed to the key role UNEP played in pulling the countries of the Mediterranean together to start grappling with the problems of pollution in the Mediterranean Sea (*WER*, Feb. 17, p. 1), and in helping to formulate practical agreements and conventions among nations.

"This is the kind of action we would like to see repeated and expanded," he added.

A notable feature of the debate at the Governing Council, both in plenary sessions and in committee deliberations, was a new seriousness and a concentration on real environmental problems instead of political posturing. Environmental experts here were delighted in the almost complete absence of the confrontation between the industrialized world and the developing countries that characterized the preceding two Governing Council meetings in 1974 and 1973.

According to D.A. Munro, director-general of the liaison and coordination branch of Canada's Department of the Environment, who led the Canadian delegation, the most important features of the Nairobi deliberations were freedom from dispute and a generally balanced approach to the problem of reconciling the needs of the environment with the legitimate aspirations of the Third World for an improved standard of living.

**UNEP Fund**—According to UNEP's executive director, Maurice Strong, over \$110 million has been pledged by more than 50 countries to support UNEP action programs. Major contributors are the US (\$40 million pledged), the USSR (\$10.8 million), Japan (\$10 million), the Federal Republic of Germany (\$8 million) and Canada (\$7.5 million).

Planned spending on action programs over the next three years—which include about 250 specific projects already underway or about to begin—is \$24.7 million in 1975, \$27.8 million in 1976, and \$32.5 million in 1977.

The UNEP Fund has been partially allocated to specific areas—with 21 per cent going to Africa, Asia, Latin America, Western Asia, Europe and the Mediterranean—and the remaining 79 per cent to global projects.

More than half of the allocated funds are earmarked for activities carried out in cooperation with other UN agencies, about 45 per cent are for projects carried out with non-UN organizations or individuals.

**Developed Nations**—Both Herter and Munro emphasized the important roles their countries had to play in UNEP activities.

"We have been, without question, the world's biggest polluter," said Herter, "but in the past four or five years we have learned a great deal and spent an enormous amount of money. We've gotten ourselves into the same jam as most industrialized countries—the jam of development without regard for environmental consequences. Our experience will be an example to the developing countries... and our technical expertise is likely to be very helpful to other peoples," he said.

Munro added, "We in Canada have achieved a significant level of development, and yet there are

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regions of Canada which are not yet as developed as we should like to see them. We are therefore trying to achieve in our own country the sort of balance between the environment and development that is needed on a global scale. For this reason we think that what we have learned through our experience can be of value to UNEP."

At its final plenary meeting on May 2, the Governing Council approved, among other draft decisions, a draft program policy and implementation scheme presented by Governing Council president Helena Benitez of the Philippines which in broad terms supported the conclusions of Maurice Strong in his introductory report and statement, and approved the programming of projects proposed by the UNEP Secretariat.

PAUL TOULMIN-ROTHE

## Restraint Urged on Military Use of Environmental Modifications

*COLOMBO, Sri Lanka*—The Inter-Parliamentary Union (IPU) meeting here last month came out strongly against the use of environmental or climatic modifications for military or other harmful purposes.

The meeting approved a draft resolution prepared by IPU's Committee on Political Questions, International Security and Disarmament which:

—Urged governments to take effective steps to avoid environmental modification techniques that could have harmful effects on human welfare.

—Called upon parliaments and governments to support a ban on environmental or climatic modifications, including short-term weather modifications for military purposes, that are inconsistent with international security and human welfare and health.

—Supported the need expressed at the 29th United Nations General Assembly for an international convention to outlaw environmental and climatic modifications for military purposes.

Environment was one facet of a discussion that also pointed up the urgent need for adherence to the treaty on non-proliferation of nuclear weapons and for the prohibition of chemical warfare.

Several delegates noted with approval the special attention given environmental and climatic modification at the US-Soviet summit held in Moscow last summer.

IPU defined the activities in question as "those active influences on the surface of the land, the sea bed and the ocean floor, the depths of the earth, the marine environment, the atmosphere or any other elements of the environment that may cause damage by the following means: (a) introduction into the cloud system (air masses) of chemical reagents for the purpose of causing precipitation; (b) modification of elements of the weather system; (c) action to influence electrical processes in the atmosphere; (d) disturbance of the energy and water balance of meteorological phenomena; (e) modi-

fication of the physical and chemical parameters of the sea and oceans; (f) stimulation of seismic waves; (g) disturbance of the natural state of the lithosphere; (h) burning of vegetation or any other actions disturbing the ecology of the vegetable and animal kingdoms."

IPU includes members from 74 national Parliaments in countries of several ideologies around the world.

## Industry Zoned Out of Caracas

*CARACAS, Venezuela*—The Venezuelan government has told 47 heavy industries they must move from Caracas. Among them are a steel mill (Sivensa) a tire factory (General) a cooking oil processing plant and a General Motors assembly plant.

The order is part of the country's new Industrial Decentralization Program, but, according to Dr. Jorge Garcia Duque, director of industries in the Development Ministry, compliance for existing industries will be voluntary, for the most part. "The process of getting established plants to move where we want them will be lengthy," he said. "Tax and other incentives will be given to those firms that comply, but the government will not put pressure on those that procrastinate."

Under the decentralization program, the government has created four zones.

Caracas and its metropolitan area comprise one zone. Only those industries necessary to serve the population will be allowed to stay, provided they employ no more than 150 people, have a total investment not exceeding about \$1.5 million, do not consume more than 350 cubic meters of water per month, do not require more than 1,000 kilowatts of energy and do not occupy an area larger than 3,000 square meters.

As far as environmental impact is concerned, industries will be classified according to the International and Industrial Uniform Classification. Dangerous or polluting industries will be permitted only in two intermediate zones adjacent to certain population centers in the interior and near ports.

Venezuelan conservationists are concerned that the government decrees leave unprotected the still unexplored and immense forests of the Guayana and southern regions.

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## Environment Programs: Little Rollback Due to Economy or Energy

**BRUSSELS**—Representatives of most major Western nations insist no reduction is planned in environmental control programs as a result of today's economic and energy supply problems. There is even some feeling new energy conservation and waste avoidance policies made necessary by the upheavals of the past year will be beneficial to environmental protection.

Environmental officials here for the meeting of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society (*WER*, April 28, p. 1), told *World Environment Report* they anticipate no

significant rollback in environmental action. Representatives of the US, Germany, Canada and Britain stressed a new awareness of environmental priorities and talked about a "trilogy of economic-energy-environment action" which must be interrelated through the systems approach.

Some point out new programs their countries are undertaking, especially in energy conservation and recycling. The Canadian representative noted that new studies are underway related to environmental aspects of possible energy projects. *(continued next page)*

*World Environment Report* asked its correspondents to report on any delay in environmental programs resulting from current economic or energy problems. Here is a roundup of their replies.

**United Kingdom**—The British balance of payments crisis has had a definite effect on the speed with which the government is tackling environmental problems. In a just-published report, Environment Minister Anthony Crosland spells out some of the more serious cutbacks. The two programs hit hardest are "Operation Eyesore," under which the government has subsidized a series of local efforts to clean up derelict areas, and the program for cleaning up estuaries.

Operation Eyesore has been terminated, and the estuary program has been delayed. Of Operation Eyesore, the Crosland report says, "while there may be good cause for many areas to receive financial assistance to deal with environmental problems in this way, I regret I cannot hold out any hope, at this time of restrictions on public expenditure, that it will be possible to reinstate the scheme, even on a limited scale."

The report stressed that maintaining the estuary cleanup program by diverting funds from other more urgent water projects would be unacceptable.

**Ireland**—Environmental protection is still in its infancy in Ireland and therefore the economic situation is not affecting it. Some effect may appear when debate begins on the country's new pollution control bill (*WER*, March 31, p. 6). There are fears political pressure will attempt to put jobs before environment. Some local planning officers point to increasing appeals against planning decisions involving pollution control requirements. Local authorities have imposed strict controls on foreign firms planning industrial development.

Since Ireland will be home to the EEC Foundation for the Improvement of Living and Working Conditions, the government is watching its reputation in environmental protection carefully.

**The Netherlands**—According to C. van Hoewijk, of the Ministry of Public Health and Environmental Hygiene, "At this moment one can't say pollution control programs in The Netherlands are being adversely affected by economic decline. The general rule (as in all EEC countries) is that the polluter pays, and the collection of this kind of surtax is continuing as usual.

"The building of treatment stations for purifying surface waters goes on faster than ever, if only to create employment, since the government gives highest priority to fighting unemployment."

**Turkey**—The economic decline has had little effect on Turkey's pollution control programs for the simple reason that there are very few such programs in progress. Pollution problems exist, but the public and the authorities both seem indifferent. The continued political instability is an obstacle too. Because of it, all projects and proposals remain on paper only.

**Greece**—The Minister of Culture and Science says that no pollution control programs have been or will be deferred or cancelled because of the economic crisis. The minister, Constantinos Trypanis, conceded the government has appealed for moderation in environmental expenditures, but this is not expected to affect major programs now underway.

These projects include environmental protection around newly built industrial complexes, improvement of the Athens sewage system, forest fire control, a campaign against marine pollution, and the experimental program for reducing pollution in Athens and its environs.

The government has earmarked \$3.6 million for this last program, which is being carried out in cooperation with the World Health Organization.

**New Zealand**—Implementation of pollution control programs has not been affected because of economic conditions, except for some minor deferments. The Health Department has become a little more sympathetic to companies short of cash which cannot afford environmental protection projects or payments.

**Brazil**—Pollution control programs have not been affected much in Brazil because there are no big programs in the works, and because inflation and unemployment aren't any worse than usual (which is bad). The tendency to go easy in enforcing costly cleanup installations, especially on small enterprises, continues. There is now some public pressure for stricter controls on water pollution following the recent oil spill in Guanabara Bay (*WER*, April 28, p. 6).

Ironically, progressives and liberals in Brazil tend to look at anything to do with environment or ecology as a "capitalist plot." The reasoning is that pollution is built up as a big threat in order to cover up the human misery in the country. These people feel the multinationals want to keep Third World poor in order to supply a cheap labor force.

**Ghana**—Pollution control is only one of the programs adversely affected by the current economic decline in Ghana. The effect on pollution control is not acute, however, because it had not become a high priority. The watchdog Environmental Protection Council (*WER*, Feb. 17, p. 4) is only now beginning to implement some of its programs.

According to the Panel's secretary, F.K.A. Jiagge, the only major activity to date has been a seminar for the public on traffic pollution. The Council does not see industrial pollution as a crisis, but concedes it is worsening. Sanitation in urban areas is seen as more pressing, but the solution to this problem does not involve high expenditures.

However, if the economic crisis continues much longer, as it appears likely to do in Ghana, then pollution control will have to be shelved, along with other unrelated vital projects.



Some officials did agree privately that new needs for energy sources and the heightened tempo of competition in a recession create environmental problems. Russell Train, head of the US Environmental Protection Agency acknowledged that the scramble for oil and nuclear power creates new dangers.

Gunther Hartkopf, West Germany's Secretary for the Environment, said his government "feels strongly that those who would like to see environmental policies made conditional upon fair weather periods in the economic cycle have failed to grasp the real long-term needs of society."

But Train pointed out to the meeting "the environment does not have the free ride it had in the late 1960's and early 1970's. . . there will be increasing pressure on the environment, but hopefully we will learn to do more." He noted the slowdown in US automobile emission standards, but said there has been no major rollback of programs.

A United Kingdom official noted a "pause," a "not going forward" in his country's program. There is "a more searching inquiry into the economic consequences of environmental programs." [See roundup story].

Otherwise, there has been no major shift in Common Market countries on environment. The EEC still plans to push ahead with its program, with the only major delay because of costs being the cleanup of the Rhine.

## Signs of Concern Over Peru's Marine Pollution

*LIMA, Peru*—A campaign by the semi-official newspaper, *La Chronica*, against dumping of refinery waste into the sea is believed to signal a new move in environmental protection by the Peruvian government.

A series of articles in the paper attacked the waste being dumped into the sea from the Marcona Mining Company's iron ore beneficiation plant, and speculated on the possible effect on marine life.

Peru is one of the world's major fishing nations, and its territorial waters contain one of the world's most valuable fish concentrations, the anchovies of the Humboldt Current.

Under Peruvian law, the newspapers are owned and operated by different segments of the society—peasants, workers, teachers, etc. *La Chronica* is the paper assigned to the government sector and its voice is considered to represent the views of the ruling Armed Forces. Marcona is a private foreign-owned mining company and not one of the many nationally owned and much larger copper mining operations that also use the sea as a dump.

Marcona dumps its waste under a temporary disposition granted in 1966 by the government of Belaunde-Terry, which was deposed by the present Revolutionary Government of the Armed Forces. So far, the regime has largely overlooked environmental controls.

Marcona has been paying about \$23,000 a year to the

(continued on page 6)

## Controlling Traffic In Skins of Endangered Species

*LIMA, Peru*—The government of Peru late last month incinerated 2,600 alligator skins with a value of several hundred thousand dollars on the international market.

Peru's Director of Forests and Wildlife, Dr. Marc Douyojeanni, ordered the skins burned so that they could not be used to stimulate further the world appetite for alligator hides and to conform with the International Convention governing traffic in the skins of endangered species. For a developing nation like Peru, badly in need of foreign exchange, the loss of the hides represented a notable sacrifice.

Under a 1973 Peruvian law, it is illegal to hunt animals on the endangered species list in the Amazon or the Andes. Jungle cats, the nutria, the river otter, the llama and vicuna are protected, as well as alligators. The program to protect the vicuna in the Andes has been particularly successful, and the once-vanishing creature is now numbered in the thousands.

But the vast wilderness of the Amazon cannot easily be patrolled. Its human inhabitants consist of indians and oil exploration crews. Among the tourists who visit Pucallpa and Iquitos there is a brisk market in illegal hides, and organized smuggling groups abound. The skin of a full-grown alligator can be bought from an indian for just a few dollars and then peddled in Miami for several hundred.

The Peruvian government is moving on several fronts to stop the illegal traffic. A new law decrees a jail term as well as a fine for vicuna hunters and extends protection to all species of alligators.

The government is also planning two national parks. Manu Park in southern Peru will be about 3,800 square miles and the other, near Iquitos in the north will be twice that size. Together they will exceed the size of Belgium in an area of all but virgin wilderness that could, if properly administered, become the greatest wildlife preserve on earth.

But Peru needs financial and technical aid to establish these parks. Helicopters, air boats and swamp buggies, communications gear, trained park rangers, biologists and administrators simply do not exist here in large enough numbers.

Under the previous regime, in the years 1962 to 1966 before restrictions were imposed, at least 400,000 top quality alligator hides were exported. In 1966 alone, Peru exported 800,000 wild animal skins, with a value of hundreds of millions of dollars. The loss of this income is felt keenly here, and whether the conservation program will be extended depends in large measure on international cooperation in controlling markets for the skins and on international aid for developing the parks.

DON MONTAGUE



## Special Report: Water Has Always Been A Problem for the Dutch

**AMSTERDAM**—Water, that eternal enemy of the Dutch, now poses a new problem for The Netherlands. Water pollution has become that country's number one environmental problem.

In the face of an increasing dependence on surface water for drinking water, the Dutch government is giving top priority to keeping the rivers clean. Presently, one third of the country's total water requirements are met with surface water, but by the year 2000 that will have reversed. By then the Dutch will be relying on surface water for two-thirds of their water; ground water will only fill one-third of their needs.

The government is dealing with environmental problems in close cooperation with industry and the population. Headed by socialist Irene Vorrink, the only woman in the left-of-center coalition cabinet, the Ministry of Public Health and Environmental Hygiene is the coordinating arm of the government responsible for the environment.

Practically the only sources of surface water for the Dutch are the Rhine and the Maas Rivers, both of which flow through heavily industrialized regions of Western Europe where they take on heavy waste discharges before flowing through the Netherlands and into the North Sea.

Incidental cases of poisoning in the Rhine have caused near panic in the Netherlands and made the importance of international pollution control for these waterways painfully clear.

Switzerland, France, Luxembourg, West Germany and the Netherlands signed a convention in 1965, and subcommittees are preparing anti-pollution measures. But international regulations by which the riparian states engage to take legal measures against water pollution have not yet been enacted.

The Netherlands has had a Surface Waters Pollution Act and an Air Pollution Act for several years. Legislation on noise, solid domestic and industrial waste, soil pollution and ground water pollution are being drafted.

The Surface Waters Pollution Act requires government permits for the discharge of waste into state waters and imposes levies on polluters. The money is used to reimburse those who are obliged to take steps to eliminate or prevent water pollution.

Government statistics show that the water pollution situation is far from satisfactory. The total production of domestic and industrial waste is now more than 40 million inhabitant-equivalents. Of the 40 million, 15 million are discharged into coastal waters without treatment; nearly 7 million are wholly or partially treated; only 5.5 million can be absorbed

by the natural self-purifying capacity of the inland waters. Therefore pollution of the surface water by more than 10 million inhabitant-equivalents remains.

**Air Pollution**—The Netherlands, a flat country with no deep valleys or mountain slopes, no long periods without wind and no long periods of fog, is in a favorable natural position to deal with air pollution. But danger signals have been seen, especially in the industrial areas of Rotterdam with its oil refineries and petrochemical industries.

The Air Pollution Act of 1970 lays down rules regarding pollution by industry, traffic and domestic heating. It deals with the measurement of pollution and defrayment of costs based on the "polluter pays" principle. Recently, a nation-wide air pollution monitoring network with more than 200 stations became operative. And, because of the increasing use of natural gas instead of coal or oil, pollution by domestic heating and industry is declining.

**Sulphur Dioxide**—A decree issued by the Ministry of Public Health and Environment Hygiene under the Air Pollution Act went into effect last November curbing sulphur dioxide emissions. A step-by-step reduction of the sulphur content in industrial and domestic fuel oil was ordered.

No more than 2.9 per cent sulphur is allowed in heavy fuel oil, 0.9 per cent in domestic fuel oil category I, 0.7 per cent in gas oil and domestic fuel oil category II, and 1.5 per cent in other fuels including coal, gasoline and petroleum. These restrictions apply to use, import or trading of fuel oils, excepting those intended for export or use in ships at sea.

A further 0.2 per cent reduction will follow effective July 1, and another 0.2 per cent by July 1, 1976.

Vorrink told *World Environment Report* that because of the use of natural gas, air pollution by sulphur dioxide in most parts of the country did not previously exceed the limits set in the new legislation. The objective of the new measure is to lower the emissions in heavily industrialized and urban regions, and to prepare the way for the increased use of fuel oils after 1975 when the supply of natural gas will have reached its maximum capacity.

Coinciding with the government's decree, a report was published stating that the rain water in the heavily industrialized areas surrounding Amsterdam contains acid concentrations 10 to 100 times stronger than normal. The sulphur dioxide emitted by industry is dissolved in the rain drops and changed into sulphuric acid.

H.G. KERSTING



## Brazil Vs. Argentina Border Dispute on Hydro Power

**BRASILIA**—The Brazilian government has tried unsuccessfully to win other governments over to its side in a long-standing feud with neighboring Argentina.

The feud centers on Brazilian plans to develop the Parana and Iguacu Rivers, which originate in this country and flow into Argentina.

The argument took on renewed fervor recently when Brazil began plans to build the Itaipu power station, which will eventually have a capacity of 10 billion kilowatts and be one of the largest hydroelectric plants in the world.

The Argentines are insisting they are entitled to prior consultation, alleging that such a massive project would affect the flow of water downstream, but the Brazilians have adamantly refused any such consultation.

In the latest episode, the Brazilian representative, Bernardo Brito, walked out of last month's Tokyo meeting of the United Nations Committee on Natural Resources because the meeting recommended referring the question of water resource development to the International Law Commission. The Committee is also forging ahead with plans for the United Nations Water Conference, which is to be convened in Buenos Aires from March 7 to 18, 1977.

The Brazilians have been opposed to the water conference from the outset. Originally, the United States sided with Brazil, because the Water for Peace Conference had been held in Washington in 1966, but the US is now going along with plans for the Buenos Aires meeting.

Before last month's Tokyo meeting, the Brazilian Foreign Ministry called in the ambassadors of Egypt, Morocco, Lebanon and Algeria to explain the Brazilian position in detail. Iraq has supported the Argentine position, and Brazil wanted to make its case to other Arab states.

The Arab representatives were told Brazil's main argument is that any type of compulsory prior consultation would threaten national sovereignty. In principle, according to Brazil, such a right could mean that a mineral deposit which extends across an international border could be mined by either country only after consultation with the neighbor. According to the Brazilians, this could very well apply to petroleum deposits, which often extend underground between countries.

Iraq has proposed that consultation be restricted to "hydro" resources only, but Brazilian experts claim this would not exclude petroleum, the deposits of which could be considered an "underground lake."

Iraq, like Argentina, is a downriver country, with its two main rivers, the Tigris and Euphrates, flowing in from Syria and Turkey, respectively. But, because Iraq is also a petroleum producer, it is ready to compromise to protect its known and potential petroleum deposits.

In the long run, Brazil too could lose from lack of prior consultation on water resources because its own major river—the Amazon—travels through Peru, Colombia and Bolivia first. But development of the northern jungle regions of the Amazon is far more remote than the issue with Argentina.

GEORGE HAWRYLYSHYN

## Pollution Control For Kuwait Industrial Complex

**KUWAIT**—Kuwait's Minister of Finance and Oil has signed a 20-month consulting agreement with a British firm, Cremer and Warner, of London, to initiate the pollution control program at the big Shuaiba Industrial Area.

Field studies will occupy the first ten months, in collaboration with a technical committee which includes representatives of the Shuaiba Area Authority, the Ministry of Electricity and Water, the Kuwait National Petroleum Company, the Petrochemical Industries Company, the Kuwait Chemical Fertilizer Company and the Kuwait Cement Company.

The Shuaiba Area Authority's Pollution Control Center and the various industrial laboratories in the area will assist the consultants.

The industrial area is about to be extended by annexing Shuaiba Village and its adjacent area. This will create an industrial complex of 14 square kilometers.

The consultants will check the pollution control programs already carried out by the Authority over the last two years; identify the principal pollutants and their sources; determine levels of these pollutants and indicate acceptable levels for health; determine acceptable incoming pollution limits for the power stations and water distillation plants in the area; develop a monitoring program, including recommendations on instruments and alarm systems to be used by all plants in the complex; determine flow patterns in the coastal waters and make appropriate recommendations on liquid effluents from the complex; assess pollution control plans of the various plants; arrange a training program in Britain for selected Kuwaiti technical staff; and develop a mathematical model to predict ground level concentrations of pollutants.

Peru Pollution (continued from page 4)

Ministry of Health for a license to dump, but the practice now appears in jeopardy.

Peru has over 1,500 miles of coastline, and most of its industry is concentrated in the narrow coastal desert. Fishmeal and minerals are the country's major exports, with both industries now using the sea as a dumping ground for waste.

Waste from the fishmeal industry around Chimbote has turned a huge area of the sea jet black.



## Briefs . . .

### Fishermen Try To Force Cleanup of the Seine

French fishermen from Le Havre, Calais and the Seine Bay area have joined forces to bring court action seeking to enforce regulations controlling pollution of the Seine River.

In an effort to force firms to stop dumping pollutants into the Seine, the fishermen's lawyers have filed a criminal complaint against "X"—a procedure in French jurisprudence that places the burden on the court to determine the guilty parties.

On the administrative level, they have brought action against the government for "insufficient application of regulations against nuisances." At a recent press conference, the complainants showed reporters ulcerated fish, claiming the sores were caused by titanium dioxide.

### Activated Coke For Flue Gas Desulfurization

Bergbauforschung GmbH, the research establishment of the German Coal Mining Association, has begun testing a desulfurization pilot plant claimed to have distinct advantages over smoke scrubbers.

The tests are being conducted at the STEAG coal-burning electric power plant at Luen in North-Rhein Westphalia. Activated coke is used to absorb the SO<sub>2</sub> in stack gases and has a capacity of 150,000 cubic meters of gas an hour. Deutsche Babcock & Wilcox of Oberhausen built the plant for which the German government contributed \$2.8 million.

The process employed in the pilot plant reduces the SO<sub>2</sub> content of the stack gases to between 0.1 and 0.2 per cent by volume. Through a de-

sorption process the SO<sub>2</sub> is removed from the coke and reduced to free sulphur, thereby circumventing the hard-to-dispose-of residue generated in wet scrubbers. The coke can be reused again and again.

A second advantage claimed for the process is that the temperature of the stack gas is reduced only to a range of between 232 and 322F. This eliminates the need to reheat the gas to provide the required draft in the stack, as must be done in scrubber-equipped plants. Depending on the sulphur content of the coal burned, the Bergbau Forschung plant adds between 0.02 and 0.04 cents per kilowatt hour to the cost of power generated.

### Germans Study Offshore Nuclear Power

The West German Federal Ministry of Research and Technology has commissioned a feasibility study of off-shore nuclear power stations.

The area between the East Frisian Islands and the West German mainland is considered an ideal location for the proposed plants.

Ernst G. Klein, manager of Westinghouse' Dusseldorf office, and a leading advocate of offshore nuclear power, told *World Environment Report* that these facilities have many environmental and economic advantages over onshore units.

Because they are not subject to geographical considerations, the design and construction of offshore facilities is simplified and could cut production costs by as much as 15 to 20 per cent, Klein said. While normal construction time for an onshore plant takes five to six years in Germany, Klein said that the simpler standardized offshore plant could be assembled in 18 to 24 months after the first model has been built and tested.

Floating power stations would also require much less space than onshore plants, and the ocean could be used for cooling thus making huge cooling towers unnecessary. The water temperature 125 meters

away from the reactor platform would be a mere 1.6 Centigrade above normal, Klein said.

### Low Fertility in Amazon Soil

Only 4.02 per cent of the Amazon soil has medium to high fertility, and almost 80 per cent of that is underwater part of the year, according to preliminary reports from RADAM, Brazil's aerial and infrared photography programs.

These first conclusions of the four-year RADAM Amazon project confirm ecologists' suspicions. RADAM experts criticized INCRA, the government land settlement institute, for "its lack of coordination with other government organs which are drafting a policy of occupation and integration of the area." INCRA is responsible for settlement of regions along the newly opened Trans-Amazon Highway.

Although the percentage of fertile land in the Amazon area is small, the entire jungle region is so vast that four per cent represents 200,000 square kilometers, an area only slightly smaller than Great Britain.

### Cleaning Up Rio's Guanabara Bay

The Iraqi tanker that leaked 20,000 tons of crude oil into Brazil's Guanabara Bay was fined only \$44,000.

This was the worst spill in Brazil's history. The fine was set so low because the law covering the incident bases the fine on the tonnage of the ship rather than on the amount of the spill.

Mopping-up operations continue on the blackened beaches inside the bay. No cleanup figures are yet available, but some published accounts estimate the damage to be in the hundred-thousand-dollar range.

It is estimated that it will cost almost one million dollars to patch the crack in the tanker.

Meanwhile, a round-table confer-



ence of experts has drafted recommendations for keeping the bay pollution free.

The suggestions include improved pollution legislation, installation of basic sanitary facilities in the area, the creation of several new agencies to police environmental control and the creation of a state company for the sole purpose of cleaning the bay.

#### Waste Heat Used in Forest Product Mill

A Nationalist Chinese project for an Amazon pulp, lumber, paper, cellulose and rayon mill will be designed to use a by-product of its own production as an energy source.

The Formosa Chemical and Fiber Corporation will use heat generated by the transformation of rock-salt into chlorine—a process in the production of cellulose—to run the generators of the \$63.7 million mill to be built on either the Tocantins or the Tapajos River in the Amazon.

The mill will occupy an area of 100,000 hectares and will use native tropical trees. The company has agreed to undertake a massive reforestation project to replace the trees it cuts.

#### Coastal Cleanup In Britain

The British national campaign for the homeless—Shelter—is organizing a coastal clean-up project.

"The intention is that miles of Britain's shoreline and waterways will be cleaned up by large groups of enthusiastic volunteers all working at the same time," a spokesman for Shelter told *World Environment Report*.

District and public environment health officers are cooperating to insure the proper disposal of the collected garbage.

Shelter hopes to raise funds with this project by seeking sponsors for the clean-up squads.

#### Bio Wastes Urged as Energy Source

A Malaysian scientist has told a symposium on energy resources and the environment that livestock wastes and garbage could be converted into energy resources.

Speaking in Kuala Lumpur, Dr. Zdanek Otto Miller, the scientific director of Asia Research, Ltd, said that wastes from five cows or 50 pigs can provide enough methane gas to supply a farm's power needs.

The scientist said that a low sulphur oil can also be extracted through liquefaction or by heating garbage with carbon monoxide, water and an alkali catalyst.

Agricultural waste such as crop residue and wood waste can be converted into oil, and waste with a high moisture content can be fermented into single-cell proteins.

The manure from one cow can be converted microbiologically into 200 kg of feed with 35 to 40 per cent protein, he said.

#### Brazil Tries Matchmaking To Tame Killer Bees

Brazilian apiarists are importing Italian queen bees to mate with the savage African killer bees that are ravaging the South American countryside.

After patient match-making, Brazilian experts have succeeded in mating some of the male African bees with the Italian imports. The product of this *amore* is a gentler bee and a good honey-maker.

The African bees were introduced to Brazil 20 years ago in an effort to bolster honey production. The result was the complete opposite.

In the new environment, the African bees became savage and independent and rampaged through the continent spreading death and fear. As a result of the turmoil, annual honey production dropped from 30,000 tons to 5,000 tons, and scores of people and livestock died from bee stings.

Encouraged by the initial success

of the Italian-African match, experts are importing more Italian queen bees and turning them loose in areas inhabited by the wild African killer bees.

#### Pollution in Izmir Bay

Much of the charm of Turkey's second largest city, Izmir, has been lost due to pollution of Izmir Bay.

According to an expert from Aegean University, Dr. Ahmet Samsunlu, the Aegean port city of large waterfront boulevards and resort beaches is deteriorating because of rapid population growth, the lack of modern sewage systems and increasing industrial development.

More than 100 sewage pipelines pollute the bay; 82 industrial plants also dump their waste into the water. An additional complication is the increase in sea traffic and the waste—particularly oil—left by ships and tankers.

Dr. Samsunlu accused Turkish authorities of taking the threat to the bay "too lightly" and failing to take the necessary protective measures.

#### Underground Power Lines Required in Australia

The state government of New South Wales, Australia, will require underground power lines in all future land subdivisions. An allocation of more than \$489,000 has been approved by Premier Tom Lewis to finance the difference in cost between overhead and underground electric lines.

The order, which becomes compulsory the end of the year for all new residential subdivisions, covers about 600 metropolitan and 300 country blocks.

The federal government has been asked to put all telephone lines underground in new subdivisions in compliance with state plans.





# World Environment Report

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## Governing Council Ponders UNEP's Future

**NAIROBI, Kenya**—The 58-nation Governing Council of the United Nations Environment Programme (UNEP) is holding its third annual meeting at a time when the agency has yet to resolve its future thrust.

The developed nations on the UNEP governing council, including the US and Canada, believe UNEP must recognize its limitations and capabilities and concentrate on attacking those specific and well-defined environmental issues that lend themselves best to international cooperation. Favorite examples of this kind of project are the recent Barcelona agreement on cleaning up pollution in the Mediterranean (*WER*, Feb. 17, p. 1) and the International Referral System for Sources of Environmental Information now being developed (*WER*, Feb. 17, p. 3).

The developing nations, on the other hand, want UNEP to play an important role in UN plans to emphasize the "new international economic order." These nations encourage UNEP activities in questions such as international economics, resource use and food distribution.

In the midst of this debate, UNEP Executive Director Maurice Strong is concerned that previous environmental gains will suffer because of the current economic decline and the increasingly desperate efforts to develop energy resources.

The Governing Council members will discuss UNEP's report on the state of the environment and the agency's plans for future activities under the UN Environment Fund.

*World Environment Report* will carry a full account of the Council meeting following its completion.

## NATO Environment Panel Pushes Joint Projects

**BRUSSELS**—In conference rooms usually monopolized by military planners, a group of the world's top environmental experts met this month to review progress on cooperative projects and the state of environmental protection in their various countries. They agreed there is little likelihood of a substantial rollback in environ-

mental programs or regulations because of current economic and energy problems.

The expert panel, which meets periodically at the headquarters here of the North Atlantic Treaty Organization (NATO), is the security alliance's little-known Committee on the Challenges of Modern Society (CCMS).

Founded in 1969 after a proposal by former President Nixon, the committee includes the officials responsible for environmental affairs in each of NATO's 15 member governments. CCMS meets twice yearly and undertakes joint projects and studies.

Despite the military nature of NATO, the CCMS activities sometimes are open to participation by the Communist Warsaw Pact countries.

According to committee members and staff, original CCMS work on controlling marine oil spills was ultimately embodied in international action by the International Maritime Consultative Organization.

Despite outside skepticism about serious environmental work being done within a military organization, CCMS participants assess their work as useful. The committee has undertaken a number of projects designed to advance knowledge in several environmental and social areas, and its members believe it has a positive influence on member governments.

But CCMS officials cannot claim much success in influencing their own military establishments in actions that impact on the environment. For example, the group has been powerless to intervene in current disputes in the US and France in which military authorities are at odds with the public over planned large expansions of military bases.

*(continued next page)*

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**Roquefort in Peril**—In the US, the conflict involves Army plans to annex 60,000 acres near Fort Hood in Texas. In France, the issue is a similar planned enlargement in the Larzac region that would threaten the pasture lands where Roquefort cheese is made. The French Defense Ministry plans to enlarge a military camp from 7,400 acres to 41,000 acres.

The final outcome will be decided later this year by an Expropriation Court, where the matter now rests.

On the general issue of environmental protection CCMS members believe their governments and the general public in their member countries are now more conscious than ever before of the need to conserve raw materials and the fact that environmental and economic concerns are interdependent. They concede, however, that the quest for new energy sources is also giving rise to a whole series of new environmental pressures.

**Cooperative Projects**—CCMS now has nine cooperative projects underway. These include pilot studies on coastal pollution, being directed by Belgium, on advanced health care, being directed by the US, on advanced waste water treatment, being directed by the United Kingdom, on urban transportation, being undertaken by the US and other countries, on disposal of hazardous waste, being directed by West Germany, and on solar energy, geothermal energy and the rational use of energy under US leadership. A new project on air pollution assessment and modelling is being directed by West Germany.

DAVID FOUQUET

## Citizens Speak Out on French Nuclear Commitment

**PARIS**—Two French communities have delivered completely opposite opinions on the construction of nuclear power plants. In both cases, local economic interests—fishing, tourism and agriculture were weighed against France's strong national commitment to develop nuclear power to reduce the country's dependence on expensive oil imports.

Flamanville on the English Channel delivered a resounding "oui" in a referendum held early this month on nuclear power—437 in favor and 248 opposed. But at Port-la-Nouvelle near Narbonne on the Mediterranean, fearful fishermen carried the day with a 1,250 to 385 negative vote in a similar referendum.

At Flamanville, where there was an 80 per cent turnout of voters, local businessmen and workers, many of them unemployed, were in favor of the plant, while owners of vacation homes, fishermen and farmers were opposed.

**National Debate**—The French National Assembly is planning early debate of the country's nuclear policy. The strong French Communist party has demanded an

official investigation into the national nuclear program.

The strength of national interest in the nuclear controversy is reflected in the visit this month by a 40-person French delegation to the United States to investigate all aspects of nuclear power. The delegation was headed by Michel D'Ornano, Minister for Industry and Research and included Andre Giraud, chairman of the French Atomic Energy Commission. Half the members of the delegation are journalists.

## Divers Study Reef Formation Off Grand Bahama

**NASSAU, Bahamas**—A major undersea research project is underway this month offshore from Freeport, Grand Bahama. At a point where the continental shelf drops to a depth of 3,000 feet, divers are studying coral reefs to identify the most important factors in reef formation and preservation.

Known as SCORE (Scientific Cooperative Operational Research Expedition), the project is being funded by the US National Oceanic and Atmospheric Administration (NOAA), the Perry Foundation, of Riviera Beach, Florida, and the Harbour Branch Foundation, also Florida-based. Scientists from several international research organizations and universities are taking part, including the Smithsonian Institution and the Scripps Institution of Oceanography, as well as the US Navy and the German and French governments.

The US government is interested because of rapid deterioration of the coral reefs in the Florida Keys. By contrast, the Bahama reefs are still undamaged and pollution free. In addition to studying reef ecology, the project is also engaged in developing safe procedures for use in exploiting the natural resources of the continental shelf.

To study the vertical wall of the continental shelf, the SCORE team is using a Perry Hydro-Lab stationed in 60 feet of water. Divers are saturating at that point and then transferring to a Sub-Igloo, a small pressurized acrylic dome on the edge of the wall at 200 feet. From here, the wall is examined by means of a submersible known as the Johnson Sea-Link.

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## Multinational Corporations: No Consistent Approach to Environment

**NEW YORK**—Most multinational corporations conduct their environmental policies in a decentralized manner, acting more like several national companies than like one multinational. This is the thrust of a paper presented here earlier this month at a conference on the international economic aspects of environment management.

Multinational companies generally adapt their environmental policies to fit the particular national or even local policy climate. "Continuous, careful thought and attention is not being given to environmental impacts in project planning or product development," the report by Thomas N. Gladwin and John G. Welles says. Gladwin is a professor of environmental management at *Centre d'Etudes Industrielles*, Geneva, and Welles is vice president of institutional planning and development at the Colorado School of Mines.

**Impeding Forces**—The authors cite organizational inertia, insensitivity and resistance as major forces within companies that impede the development of an overall corporate environmental policy.

As a result of their research, Welles and Gladwin draw the conclusion that by-and-large multinational firms are "resistant to complicating traditional management patterns—particularly in areas of operating autonomy, decentralized planning, and financially-oriented performance measurement and evaluation—that have been quite successful in the past."

Gladwin and Welles say that multinationals respond to the diversity of environmental policies among nations with behavior that closely mirrors this diversity. Their report concludes that so far, very few multinational

firms see real benefits or real pressures for a multinational approach to environmental management controlled and directed from headquarters, although a movement in this direction can be discerned.

**Short-Term Planning**—Welles told *World Environment Report* the reason behind seeming corporate lack of response to environmental considerations is short-term planning, which focuses on profits over an approximately five-year period but does not look to the future.

Thus a corporation which in one year faces a new environmental regulation and suffers a loss caused by retooling to comply with the law will not necessarily alter its overall approach to the environment, because profits for the year or two preceding passage of the law may far outweigh the loss during the year of compliance.

**Impact**—Multinational corporations produce an estimated one-fifth of the world gross national product, according to Gladwin and Welles. Some observers speculate that before the close of this century, some 300 of the largest multinationals will produce more than half of the world's goods and services.

The impact of these companies on the environment can better be grasped if one realizes that multinational corporations are found in some of the most pollution-intensive industries—petroleum, chemicals and pulp and paper—and are responsible for much of the world generation of wastes.

While some large multinational companies claim to have global environmental standards, Welles said that it is usually up to the local corporate representative to apply the standards to a specific plant or office. He

### National Environmental Policy Guidelines . . .

Welles and Gladwin lay down several themes which they think should be taken as "givens" in the background of national environmental policy-making.

These are:

—As supranational regulation will be slow in coming, the individual nation states will remain as the primary locus of power over the environmental behavior of multinational corporations into the indefinite future.

—Multinationals have a substantial impact on global environmental quality—directly in terms of resource consumption and waste generation, and indirectly in terms of consumer use and disposal of their products.

—Little can be expected from altruistic, voluntary behavior—multinational environmental behavior is largely determined by economics except as modified by measures adopted by public authorities.

—Adaptation of multinational behavior along environmental lines is a dynamic, evolutionary process, the pace of which is

largely determined by exposure to progressive public policy and conflict on issues of environmental impact.

—Multinationals are the dominant sources and developers of technology needed for solving industrial environmental problems. Subsidiaries are able to tap this pool of resources and will do so when pressed by host country demands.

—International location spillovers attributable to local and regional environmental policies are not likely to be very significant as long as these parties are within reasonable bounds. Threats of locational shifting on the part of multinationals need not be taken very seriously except when cleanup costs are unusually heavy, e.g., non-ferrous metal smelters.

—Attention to environmental degradation, despite recent erosion as a result of increased economic difficulties and the energy crisis, is now deeply and irrevocably implanted as a major public concern in most developed countries.

Source: *Environmental Policy and Multinational Corporate Strategy* by Thomas N. Gladwin and John G. Welles.



cited Dow Chemical and Amax Corp. as possible exceptions which have global policies. But in most cases, he added, standards are only applied to the extent that the local or national government involved pressures the company.

**Rationale**—The authors said there are two forces that make multinational companies revise their environmental policies. One is what the authors term “the personal vision” of a top executive. This executive sets the tone of the corporation, and instills an environmental ethic in corporate policies.

The second guiding force is found in the company that has been severely set back, possibly even repeatedly, by environmental sanctions. In this case, the corporation will revise policies vowing that that will not happen to them again.

**Citizen Action**—Gladwin told *World Environment Report* that the behavior of firms is often determined by public pressure. He said that frequently corporations have been forced to abandon multimillion dollar projects because of public pressure on government officials.

Legislative and financial pressures dictate 90 per cent of corporate policy, according to Welles and Gladwin. Remaining policy is set by the guiding philosophy of the corporate chief executive.

**Two-Way Street**—Additionally, Gladwin said research has demonstrated a definite two-way relationship between profit and environmental control. The more profitable companies find it easier to institute environmental controls, and conversely, the companies that regulate environmental effects the most stringently show the highest profits.

The environmental role of a multinational in any particular country depends on a number of factors, most critically, the stringency of the applicable environmental regulations, intensity of citizen action, and extent of governmental reporting requirements.

Other factors include: size of the operation, nature and range of activities, degree of ownership, and local organizational structure.

Most of the multinationals contacted by Gladwin and Welles have not yet successfully adapted their performance measurement, evaluation and reward system to handle the issue of environmental protection.

**Uniform Results**—In a few instances, economic forces have produced uniform results on a global basis. An example of this is the product that is produced uniformly for global marketing but which meets the standards of the most stringent nation. The authors stressed that these situations were the result of cost saving, and not multinational corporate environmental policy.

For many reasons, the authors concluded that the chances for effective international regulation appear

remote. Yet the forces for harmonization of environmental policies among nations, at least within the industrialized world, are already at work.

The Organization for Economic Cooperation and Development (OECD), despite inefficiencies caused by a diffusion of interests among its 23 member states, has drafted and adopted a “polluter pays principle” and is encouraging its member nations to formulate national policy accordingly. Additionally, the Environment Ministers of the OECD nations recently adopted ten recommendations for guiding the formulation of environmental policy. The European Economic Commission is also seeking to achieve harmonization of environmental policies and legislation. Through its “Program of Action” it is beginning to lay down quality objectives at the Community level and to establish basic protection levels for a range of pollutants. SD

## Environmental Groups Attack Australian Mining Plan

**CANBERRA**—Australian conservationists are dismayed that permission has been granted to mine Fraser Island, which is near Maryborough on the south coast of Queensland.

Rich in heavy mineral sands, Fraser is described as the world's biggest sand island, a wilderness of marshes, bushland, rainforests and dune lakes.

Fraser Island is serving as a first test of the new Australian environmental protection law passed late last December. However, at the same time the Environmental Protection Act became law, the federal government gave miners permission to export minerals taken from Fraser Island. The environmental impact study required by the act goes ahead, but there does not appear to be much prospect the government will alter its commitment to the beach sand miners.

The Australian Conservation Foundation, which is trying to have Fraser Island classified in the United Nations world heritage category, is bitterly critical of the decision to mine. Director Geoff Mosley describes it as “tragic.”

Fraser Island Defense Organization President John Sinclair says that environmental interests have been sold out and that the environmental impact statement being prepared for the island will be almost useless.

Within the Australian federal system, states have the right to approve mining; the federal government has the right only to forbid export of the minerals, effectively closing the market.

The managing director of Murphyores Holdings, which is mining the island jointly with Dillingham Corp., says that the dry mill should be separating concentrate into rutile and zircon by May, turning out a premium grade zircon expected to sell for \$1,350 a ton. An initial annual yield of 35,000 tons each of rutile and zircon is expected from the mine. DON LIPSCOMBE



## Special Report: Population Aggravates Hong Kong Environment Woes

**HONG KONG**—This British colony is facing a difficult environmental situation that stems from one basic problem—too many people on too little land.

The ever-expanding population—now between four and a half and five million—on less than 400 square miles inevitably aggravates environmental problems, particularly in the colony's urban areas. Hong Kong authorities are now initiating plans they hope will lead to effective environmental controls.

Late last year the government contracted with Environment Resources Ltd., a British consultant, to help prepare comprehensive legislation and establish a pollution control agency. The firm is focusing on developing a general environmental protection ordinance covering land, water, air and noise pollution. More than \$200,000 has already been allocated, and the project is expected to be completed by mid-year.

The consultant's report will also recommend reorganization and coordination of environment departments, which are now scattered among several agencies including the Environment Branch, Agriculture and Fisheries, Water Authority, Labor Department, Public Works and Urban Services.

**Litter Problem**—Probably the most obvious form of pollution in urban Hong Kong is street litter, which is compounded by rubbish from factories located in residential areas without adequate disposal systems. A "Keep Hong Kong Clean" campaign was started in 1972 and has continued as a major program.

In 1973-74, the Urban Services Department collected an average of 3,340 tons of solid waste each day. The waste is disposed of either by incineration (600 tons per day) or controlled landfill (about 3,000 tons per day). When completed, the landfill at Gin Drinkers Bay in the Northwest Kowloon Peninsula will be converted into a 34-acre recreational site.

The consultants have recommended a \$23.4 million solid waste program including a compost plant, a baling plant, a transfer station and a larger landfill (*WER*, April 14, p. 6).

**Water Pollution**—Another major problem is contamination of the colony's harbor, coastal waters and streams. Each day, several hundred million gallons of treated and untreated sewage enter the harbor. In urban areas, most sewage is screened to remove solids, which are dumped at sea, and the remaining liquid wastes are pumped untreated into the harbor for dispersal by the strong tidal flow.

Studies by the University of Hong Kong show contamination by heavy metals in the coastal waters. And, where large numbers of people live on boats,

open sewers exist.

The government has increased monitoring local waters to help plan long-term treatment and disposal.

Anyone dumping rubbish or oil from ships or shore is liable to a fine of more than \$4,000 and six months in prison. But the Marine Department must still remove 18 tons of refuse from the harbor each day, which is collected manually from boats.

Because controlling legislation is lacking, industries can discharge untreated effluents directly into streams. Plans call for grouping industries producing harmful effluents into an Offensive Trades Area on reclaimed land.

**Air Pollution**—The Labour Department's Air Pollution Control Unit does have an ordinance to back it up and a team of personnel to carry out its program. The Clean Air Ordinance was passed in 1959, but only recently were the entire areas of Hong Kong Island, Kowloon Peninsula and the New Territories declared smoke-controlled areas.

Of about 22,000 "factories" in Hong Kong, 4,000 come under the Air Pollution Unit's control because they are fuel users. The remaining 18,000 either do not use fuel or carry out clean operations.

No more than ten per cent of the controlled users are said to exceed smoke density limits. There have been 180 prosecutions for smoke offenses, with fines up to \$418.

The colony's power stations and incinerators produce the most emissions, but, according to the Control Unit, their smoke is emitted at a high level where it can disperse. The real offenders are inefficient small industries, restaurants and tea houses, whose low-level emissions combine with vehicular pollution.

**Motor Vehicles**—The colony's 200,000 vehicles, of which 60 per cent are diesel powered, are significant contributors to air pollution. Diesel consumption increases 40 per cent annually. Existing exhaust regulations have proven difficult to enforce because of lack of testing facilities, money and manpower.

There is also growing concern with noise pollution. The Noise Pollution Subcommittee of the Advisory Committee on Environmental Pollution is studying means to curb rising noise levels from traffic, construction, aircraft and industry.

The Government Information Service is organizing a pollution exhibition for late November which will aim at educating the public on the colony's environmental problems.

ARTHUR C. MILLER



## Crown of Thorns Starfish Attacks Sri Lanka Reefs

COLOMBO, Sri Lanka—A population explosion among the Crown of Thorns starfish, *acanthaster planci*, which destroyed a significant extent of the Great Barrier reef in Australia and more recently damaged the reefs around Okinawa, is threatening the luxuriant coral reefs off Sri Lanka's eastern coast.

The government Fisheries Department is trying to control this menace by employing teams of skin divers to manually remove the starfish, which can weigh as much as five pounds each. The divers, who work without SCUBA gear, spear the creatures on iron spikes and bring them ashore for burial. They must guard against the starfish's sharp spines, which exude a poison that makes wounds difficult to heal.

The starfish feed on microscopic anemone-like polyps that form the coral reef. The predators suck out the living polyps, leaving only their whitened limestone skeletons to perish and crumble.

A 1969 survey showed the reefs to be in good environmental balance, with plenty of fish and marine flora. There was only about one starfish per square mile of reef. But by 1971 the situation had changed alarmingly. The starfish population had exploded to the point where a single diver could collect 60 to 80 starfish in one 20-minute dive. At the height of the Great Barrier Reef plague a similar dive produced only 40 starfish.

In a seriously inadequate response to the onslaught, one government scientist and two divers attempted to clear the Dutch Bay area. They collected several thousand starfish before the monsoon halted diving but by the following year young starfish abounded in the bay and about half of the coral was destroyed.

The Sri Lanka starfish is similar to those found elsewhere, a government spokesman told *World Environment Report*, but is unique in color—deep blue with mauve stripes—and appears to be a more voracious eater and more venomous than those of the Great Barrier Reef.

In 1973 there was no manual collection of the creatures, but in 1974 six divers collected and destroyed 17,000 mature specimens. This year the job continues with a team of 12 divers and a budget of \$40,000. In Okinawa, however, by contrast, 3,000 divers were used.

The Fisheries Department attributes the starfish explosion to three causes: (1) excessive collection of ornamental fish (which normally feed on the starfish larvae) by exporters who did \$300,000 business in 1974; (2) similar activity by local fishermen who use the coral fish for bait; (3) extensive illegal use of dynamite along reef areas as a method of fishing.

So far, live tropical fish exporters have lobbied effectively against efforts to curtail their activities, and the government has not taken effective measures to control dynamiting or bait fishing. MANIK DE SILVA

## OECD Concludes Traffic Control Is Healthy

PARIS—There is a direct correlation between improved living and health standards and limitations on the use of private cars in cities. This was the conclusion reached at a meeting here this month of the Organization for Economic Cooperation and Development (OECD) held to discuss environmental matters.

The participants studied reports from seven cities that have experimented with limiting private traffic in central areas. Included were systems used in such cities as Singapore, which imposes a high tax for driving in the central city, Besancon, France, which gives priority to public transport in four central zones, and Nagoya in Japan, which discourages traffic by banning parking, turning and by establishing a one-way street system.

## Pollution Incidents Raise Outcry in Brazil

RIO DE JANEIRO—The dangers of pollution were dramatically brought home to Brazilians in two recent incidents involving foreign ships.

In the first instance, the Finnish freighter *Enskeri* was discovered sailing to the South Atlantic with a load of waste industrial arsenic compounds. Its mission was to dump these wastes, sealed in drums, somewhere off the South American Coast.

Closer to home, the Iraqi tanker *Tarik Ibn Ziyad* sprung a leak on March 26 and released up to 20,000 tons of oil right inside beautiful Guanabara Bay. Some of the oil caught fire and the rest blackened water and beaches as far out as Copacabana and Ipanema.

The press has played up both incidents in front page treatment that has made pollution a general topic of conversation among previously indifferent Brazilians. Government officials are announcing they will study measures that will prevent or mitigate future such emergencies.

The Finnish government responded to the international furor over the *Enskeri* mission, particularly the joint protests by Brazil, Uruguay and Argentina, by recalling the ship. There were still oil marks inside Guanabara Bay a week after the spill, but most of the oil was carried out to sea by wind and currents.

Although there are frequent small spills in Guanabara Bay, this was the first major incident, and the authorities were not prepared for it. They tried detergent, straw, and corn husks on the water and beaches, and brought in men and tractors to turn over the blackened sand. But in the end it was nature that removed the oil.



## Briefs . . .

### Rio Considers Staggering Business Hours

The director of Rio de Janeiro's traffic department has proposed that office, store and industry work hours be staggered and extended as a partial solution to the city's chronic traffic nightmare.

Stores in downtown Rio now close at 6 pm, and the director, Celso Franco, proposes they remain open another two hours. This would allow people to shop after work and would stretch out the evening rush until after 8 pm.

Storekeepers have reacted favorably to Franco's proposals. He is now meeting with bankers, office workers and industrial workers to develop a program that can be presented to city authorities for passage into law.

### Exports of Ornamental Fish Deplete Amazon's Food Fish

Brazil's Fishing Development Agency is checking complaints that massive exports of ornamental fish are depleting stocks in the Amazon River. The complaints allege that a decrease in ornamental fish results in a decrease in the larger food fish that are fished commercially for local markets because the larger fish feed on the ornamental varieties.

### Caramanlis to Decide Course of Greek EPA

Premier Constantine Caramanlis will personally decide the form and status of a central environmental protection authority for Greece, a government spokesman told *World Environment Report*.

At present, a low-level department within the Ministry of Culture is charged with responsibility for the environment, but the government

has been under increasing pressure to upgrade its status (*WER*, March 3, p. 6).

The premier is expecting recommendations from a group of invited foreign and Greek environmental experts on what form the central agency should take. At this point, the spokesman said, the experts believe the country's environmental problems do not justify a Ministerial level agency and are leaning toward a General Directorate attached to an existing Ministry, to be expanded progressively.

### Colombian Army Graduates Class of Ecology Instructors

The armed forces of Colombia have graduated the first class of 360 "ecology instructors" as part of a nationwide plan to develop environment brigades.

The group forms part of a pilot project directed jointly by the army's Military Institutes and the Colombian wildlife service, Indereña. Once the recruits finish their military service, they will return to their villages to continue educating Colombians on the need for protecting the country's environment.

### Conservation Coins for Sale

The International Wildlife Fund has signed an agreement with the Government of Pakistan to issue conservation coins for sale. The income will be used to support wildlife conservation programs submitted by Pakistan to the Fund and the International Union for Conservation of Nature and Natural Resources (IUCN).

In a related development, steps have been taken to increase cooperation between Pakistan and her neighbor Iran in wildlife conservation. The Wildlife Conservation Organization of Iran, of which the Shah, Prince Abdul Raza Pahlevi, is honorary president, will work with local governments in Pakistan on developing wildlife parks.

### UNEP Headquarters Agreement

The Government of Kenya has signed a Headquarters Agreement with the United Nations that provides the formal basis for the Nairobi headquarters of the UN Environment Programme (UNEP), which is housed in the Kenyatta Conference Center, the city's tallest building.

Nairobi was designated as UNEP headquarters site by a General Assembly resolution in December, 1972. The formal agreement allows member states to accredit permanent representatives to UNEP and to accord them the status of diplomatic missions.

Under the agreement, UNEP will have facilities and privileges similar to other UN headquarters in New York, Geneva, Rome, Paris and Vienna.

### Haiti Awards \$7.8 Million Drinking Water Contract

The government of Haiti has awarded a contract for the modernization and rehabilitation of the antiquated potable water system in Port-au-Prince. The \$7.8 million contract was awarded to the Paul N. Howard Co. of North Carolina and represents the second phase of the program; the first phase was a survey of the system and its needs.

### Malaysia Turns to West Germans for Advice

The Malaysian government has asked the West German government to provide expert advice on pollution problems and to help prepare plans for controlling water, air and noise pollution.

According to Dato Ong Kee Hui, Malaysia's minister of Local Government and Environment, Malaysians may be sent to West Germany to study environmental protection practices. *(continued next page)*



The minister has also announced a program to prosecute ships in Malaysian waters violating the country's antipollution laws. The Malaysian Navy and Marine police will stop and arrest ships for dumping at sea. Although he gave no details on how to implement his plan, Dato Ong said compensation would be sought from the ship owners' governments.

#### CENTO Nations Study Water Management

The Central Treaty Organization (CENTO) countries—particularly

Iran, Turkey and Pakistan, which have huge irrigation networks—have been urged to develop new water management programs.

Participants at a CENTO-sponsored seminar held in Lyallpur, Pakistan last month said the countries should develop means for using saline water for crop production, and called for urgent attention to the problem of reclaiming and managing salt-affected soils.

The participants also asked CENTO to sponsor research projects on the actual water needs of plants so that farmers could be instructed on just how much water they need and when to apply it. This would enable the CENTO countries to

make better use of their limited water resources and increase food production.

#### Malaysia Embarks on Surface Water Study

Malaysia will undertake a long-range inventory of its surface water resources, according to J.G. Daniel, director general of the country's Drainage and Irrigation Department. The inventory will include future irrigation needs, drainage, soil erosion, pollution and flood control, hydropower and water power.

## Calendar . . .

**June 30-4 July**—International Symposium on Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environment, Otaniemi, Finland.

**July 1-7**—Scientific group on Methods of Monitoring Carcinogenic Chemicals in the Environment, Geneva, sponsored by World Health Organization.

**July 9-12**—Symposium on the Changes in the North Sea Fish Stocks and Their Causes, Aarhus University, Denmark, sponsored by International Council for the Exploration of the Sea.

**July 14-17**—Seminar on the Management of the Transfer of Industrial Technology, Geneva, sponsored by Economic Commission for Europe.

**July 14-18**—Expert group on Center for Marine Science and Technology, Lagos, Nigeria, sponsored by Economic Commission for Africa.

**July 14-18**—Working group on Oceanographic Data Exchange, New York, sponsored by UN Educational, Scientific and Cultural Organization and Intergovernmental Oceanographic Commission.

**July 28-1 August**—International Centers Week, Washington, sponsored by Consultative Group on International Agricultural Research, 202-477-3592.

**August 1-11**—International working meeting on Teacher Training in Environmental Education and Conservation, Caer-

navonshire, U.K., sponsored by International Union for Conservation of Nature and Natural Resources.

**August 18-20**—Specialized Conference on Nitrogen as a Water Pollutant, Copenhagen, sponsored by International Association on Water Pollution Research.

**August 18-23**—Symposium on Long-term Climatic Fluctuations, Norwich, U.K., sponsored by World Health Organization, International Association of Meteorology and Atmospheric Physics.

**August 24-29**—Preparatory Committee, Conference on Human Settlements: Habitat, New York, sponsored by UNEP.

**August 24-6 September**—Symposium on Methods of Chemical Investigation of Natural Waters sponsored by International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

**August 26**—Symposium on the Large Scale Modification of Fresh Water Systems and Their Effects on Oceanic Environment, Grenoble, sponsored by International Association for the Physical Sciences of the Ocean; International Association of Meteorology and Atmospheric Physics; and International Association of Hydrological Sciences, 41 Rakoczi Ut, Budapest 8, Hungary.

For further information, contact the Center for International Environment Information.





# World Environment Report

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## EPA Is US Focal Point For UNEP Information System

WASHINGTON—The Department of State has designated the Environmental Protection Agency to be the official US Focal Point for the International Referral System for Sources of Environmental Information (IRS).

IRS is the United Nations Environment Programme's mechanism for speeding the interchange of environmental information among the countries of the world, particularly between the developed and the developing nations (see *WER*, Feb. 17, p. 3 for a full description).

Fitzhugh Green, EPA's Associate Administrator, told *World Environment Report* he is "pleased to have EPA in the forefront of an operation that will be useful not only to the US itself, but also to the other nations in the UN system."

Funding and staffing details are still being worked out at EPA and are expected to be announced shortly.

The focal point committee which has so far been coordinating US participation in IRS will continue to function in an advisory capacity. The committee includes representatives from several government agencies and the private sector.

**New Director**—In a related development, Richard Morse of the National Oceanographic and Atmospheric Administration's data center is expected to leave for Nairobi shortly to become director of the IRS central unit.

An oceanographer who has moved into data and information management, Morse has been deeply involved in the development of IRS since the Stockholm Environment Conference in 1972. He will be on leave from the Department of Commerce and will report to Hans Mollenhauer, director of UNEP's Division of Geophysics, Global Pollution and Health. As head of the central unit, Morse will be responsible for all operational aspects of IRS.

## Third Law of The Sea Conference—Will it Strike Out?

GENEVA—In the rush to claim seabed resources, government representatives at the Third Law of the Sea Conference appear to be placing environmental concerns on a back burner and concentrating on the political aspects of who will control rich seabed deposits of minerals.

At stake at the conference, now underway here, is the fate of the oceans and seabed. Those familiar with its past history are divided as to whether any visible results can be expected by the May 10th closing date.

Last year's session of the conference in Caracas bogged down in conflict between developed and developing states, coastal and land-locked states. Many experts fear the same outcome at the present meeting.

The Geneva Conference, which opened March 17th, is divided into three operating committees—pollution and scientific research, the seabed, and shipping and fishing.

The pollution committee is considering vessel discharge standards and regulations for land-based sources of pollution, according to Alan Seilen, acting director of the Oceans Division of the US Environ-

mental Protection Agency's International Activities office. Seilen said that 80 per cent of marine pollution originates from land-based sources.

Some European experts think the pollution issue is the least controversial aspect of the Conference and the most likely area for agreement.

**In Washington**—Seilen told *World Environment Report* that while he would like to see some sort of international commitment regarding vessel discharge standards emerge from the meetings, he doubted any agreement

(continued next page)

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would be forthcoming. He expressed concern that the thoughtless rush to claim seabed resources might have major environmental repercussions at a later date.

**Possible Agreement**—The two most likely areas for agreement at the Conference are extension of the territorial limit from three to 12 miles and creation of a 200-mile economic zone, according to Seilen. "Any other objectives do not stand a chance," he said.

Any treaty establishing a 200-mile economic zone would have to specify that the zone will not interfere with navigation or scientific research before the US could support it, Seilen said.

Seilen said he would like to see an International Deep Seabed Authority established, provided it did not discriminate against US efforts to utilize the seabed. However, the question of how much power should be delegated to the new Authority will probably prove so divisive as to kill any prospects of agreement, he said.

Several nations are already exploring the seabed for mineral-rich manganese nodules, and legislation has been readied in the US Congress to provide prospecting licenses for American corporations if the Law of the Sea Conference should fail to set up an international authority.

Time is running out for a strong international law to regulate seabed exploitation because nations are moving on their own, and once their policies are set into law, countries will be less interested in giving power to an international regulatory statute or authority.

If present plans hold, Geneva will be the last Law of the Sea Conference, and Seilen says that its finality gives it an advantage over the Caracas Conference, where delegates could postpone commitments until the Geneva Conference.

**Little Real Negotiations**—Maxwell McKnight, who was director of Marine Resources with the US delegation in Caracas, told *World Environment Report* that the Caracas Conference provided "little or no real genuine negotiations," and couched his feelings about the present conference in what he called terms of "cautious pessimism."

"I venture there will not be much if anything that resembles a treaty on May 10th," McKnight said.

**Seabed Jurisdiction**—McKnight, a committee coordinator with the National Petroleum Council in Washington, said the 77 developing nations, including members of the Organization of Petroleum Exporting Countries, want unique seabed jurisdiction beyond the shelf, and want control of access to these waters to rest with the coastal state. This runs directly counter to US determination that navigation of important waters such as straits not be limited.

All anyone can do now is speculate as to the outcome of the Conference. But one thing is certain. By May 10 the Conference, through treaty or through default, will have determined the future course of world seabed exploitation. SD

## EEC Considers Tanker Regulation If Law of the Sea Fails

**DUBLIN**—If the Law of the Sea Conference in Geneva drags on indecisively, the European Common Market may formulate its own regulations to deal with oil tanker spills, the Community's Commissioner for the Environment, Carlo Scarascia Mugnozzi said here.

The commissioner was in Dublin to meet with Irish environmental ministers.

At present the EEC has no common policy on environmental disasters, but this will be considered at a meeting of environment ministers early in May. The meeting will probably be held in Dublin.

While Mugnozzi was here, the third oil spill in five months occurred at the Gulf oil terminal at Whiddy Island in Bantry Bay. This time the spill was small, an estimated 240 gallons, but in October 651,000 gallons were spilled and in January, 150,000 gallons.

The most recent spill was caused by a hairline crack in a tank aboard the Gulf chartered tanker *Finn Canada*.

Oil patches were found at three points west of Gearhies, a fishing port badly polluted by the October spill.

The *Finn Canada* was ordered to sea where repairs were carried out before the ship returned to discharge its cargo, crude oil from the Middle East for shipment from Bantry to European locations.

The Irish Minister for Transport and Power, Peter Barry, has ordered Gulf to submit a written report on the spill. In January Barry said any further negligence on the part of the Gulf would oblige the government to consider whether Ireland was indeed benefitting by Gulf's operations at Bantry.

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## Special Report: Denmark's New Environmental Law

**COPENHAGEN**—Danish officials are now evaluating the first six months' experience under the country's comprehensive new Environment Protection Act.

The Act aims to prevent and control air, water and land pollution, to control noise, and to provide the administrative basis for land-use planning.

The new legislation was given Royal assent in June 1973 and became effective October 1, 1974. It was passed in response to a growing national belief that pollution in this country of islands had become intolerable. Water pollution is the most urgent problem.

**Water Pollution**—Only ten of Denmark's thousands of lakes are now regarded as unpolluted. Many of what were once Northern Europe's finest bathing beaches are today unfit for swimming.

Rapid urbanization has outstripped Denmark's capacity to deal with industrial and domestic wastes. Only half of the five million inhabitants are served by a sewage system with a treatment plant, and more than half of the existing treatment plants are overloaded. Eight per cent of the liquid wastes goes into lakes, 35 per cent into rivers or streams and 57 per cent into the sea.

Denmark produces three million tons of solid wastes annually—about half of which is disposed of in garbage dumps.

These uncomfortable facts led the Danish public to support a national campaign to control pollution in all sectors of human activity.

The total cost of the cleanup has not been reckoned, and the first indications will come in the national and regional budgets submitted for the fiscal year beginning this month. However, it is already apparent that expenditures by both private and public sectors will be scaled down from earlier estimates because of inflation and economic problems.

**Pragmatic Approach**—The new Environment Protection Act stresses that the importance and economic significance of an industrial plant or other institution must be taken into account when pollution controls are imposed.

The Act emphasizes decentralization. There is a Ministry of the Environment established in Copenhagen, but enforcement is carried on primarily at the local government level.

Acting on guidelines from the Ministry, local authorities apply standards to local situations, and are empowered to give exemptions to essential industry.

The Minister has potentially far-reaching powers over any activity that could pollute air, land, stream, lakes or seas. Controls can be applied to emissions of solid, liquid or gaseous matter and to vibrations or noise. The Act also covers hazardous processes and the storage and transportation of hazardous substances.

**Enforcement**—The authorities have the power to order a reduction in polluting activities or, in extreme cases, close an offending plant.

Violations of these orders are punishable by fines or imprisonment up to one year.

Appeal from a local decision can be made directly to the Environment Board (which is part of the Ministry) or to the Minister himself.

Decisions by the Board or Minister can be referred to an Environmental Appeals Tribunal, which is presided over by a chairman with the status of a high court judge.

So far there have been no appeals to the Tribunal, but industry is expected to make considerable use of this provision to establish test cases on Ministerial decisions.

Individual citizens or groups also have the right of complaint or appeal to the Board.

CONSTANCE BOULTWOOD

## Denmark Pushes Resource Recycling Campaign

**COPENHAGEN**—Denmark has few natural resources, and as prices rise, Danes are increasingly recycling their materials.

A five-cent refund on bottles gives breweries here a 99 per cent re-use rate on their bottles. One supermarket chain has also instituted the five-cent return for wine bottles.

Danske Staalvaerk recycles metal waste, and Kom-

munekemi I/S on the island of Fyn is a chemical recycling center.

The Nordic Waste Exchange, started late in 1973, gives free information about recycling. Begun on the initiative of the Federations of Industry in Denmark, Norway, Finland and Sweden, the Waste Exchange gives information regarding materials that, while they might serve no purpose at their place of origin, could be put to use or effectively destroyed elsewhere.

Due to the fast rising prices of raw materials, information on plastics recycling is also included in the Exchange, although just a short while ago, this would



have been thought fruitless. Manufacturers' names are not given, but a code is used, and inquiries are passed on.

**Citizens Recycle**—A trial project in citizen waste recycling is underway in Birkerød, a town of 22,000 inhabitants 20 km from Copenhagen.

Participation in the experiment is voluntary, but almost every house displays a sticker indicating that its inhabitants are participating, and officials claim 93 per cent cooperation.

The main object of the program, sponsored by municipal authorities, Hastrup Fabrikker A/S Odense (packaging manufacturers), and Bates Paper Sack Co., Ltd, is the separation of waste into three paper sacks—one for ordinary household refuse, one for glass and metal and one for paper.

Begun in September, 1974, the trial will continue for one year. Normal household refuse collection proceeds as usual during this period, but the extra sacks are collected fortnightly by a local hauling contractor.

Figures for the first month of the test show that 127 tons of recyclable waste were collected—82 tons of paper, 45 tons of glass and metal. Private households accounted for 103 tons, while 24 tons came from industry.

"If people could get used to grey notepaper instead of white, grey egg-containers instead of white ones, and toilet paper that could also look non-white, then more household waste paper could be recycled," Borge F. Mortensen, managing director of Enviroplan, a Danish environmental consulting firm that will prepare a report on the experiment, told *World Environment Report*. "As it is, office waste is more eagerly sought as it can be used to produce white paper," he said.

Increasingly municipalities in Denmark are combining their waste collection operations to cut costs. One such group of seven communities has reduced collection costs by 50 per cent.

CONSTANCE BOULTWOOD

## Greek Minister Warns Of Environmental Breakdown

**ATHENS**—The Minister of Culture and Sciences, who is responsible for environmental protection, has warned of severe deterioration of the country's natural environment unless corrective measures are taken immediately.

Most of Greece's gulfs are already polluted, according to the Minister, Constantinos Tripanis, the worst being the Saronic gulf near Athens and the Thermaikos Gulf in Salonica in the north, both of which receive large amounts of industrial wastes.

Five rivers in northern Greece receive radioactive waste from neighboring countries, Tripanis maintains, thus becoming unsuitable for irrigation and polluting the sea into which they flow.

In certain coastal areas near Athens, fish life is already virtually destroyed, Tripanis says, and it is endangered in many Greek lakes and rivers. The country's flora is also suffering, with a reduction in forested area from 45 per cent in 1830 to 19 per cent today.

Greece's three major cities—Athens, Piraeus and Salonica—are polluted by increasing levels of carbon monoxide, sulphur dioxide and nitrogen oxides, according to Tripanis.

**Environmental Regions**—Tripanis believes drastic measures must be taken. As a first step he urges that the country be divided into environmental regions, based on their importance from an environmental point of view and the degree of pollution control required.

Then industrial development could take place throughout the country with the appropriate pollution control preconditions.

Tripanis also called for a series of new environmental protection laws to be drafted, charging that existing ones are "unmethodical, insufficient and in many cases contradictory." He advocates a national education campaign to enlighten the public on the serious environmental problems facing the country.

In answer to charges that he is exaggerating the problems and thus needlessly slowing the pace of industrialization, Tripanis replies:

"The Ministry's aim is not to halt the country's industrialization but, on the contrary, to facilitate it through the supply of scientific information and methods so that development can be achieved without further harm to the country's already damaged natural environment."

**Cleaning Athens**—An experimental program for reducing pollution in Athens and its environs is already underway as the result of a 1973 agreement with the World Health Organization (WHO).

Under the four-and-one-half year program, Greece will spend \$3.6 million and the United Nations Development Program (UNDP) will contribute \$1 million for equipment, consultants and training.

The program's aims include pollution monitoring, study of control methods for air and marine pollution, noise control and waste drainage systems.

KYRIOS CONDOULIS



## Club of Rome: Europe Looks at the Second Report

**BRUSSELS**—Political leaders in Europe and elsewhere are looking seriously at the just-released second report to the Club of Rome—"Mankind at the Turning Point."\*

The first report to the Club—the 1972 "Limits to Growth" by Dennis Meadows of Dartmouth College—was generally given short shrift in political circles because of its "zero growth" approach. But the authors of the new report—Mihajlo Mesarovic of Case Western Reserve University in Cleveland and Eduard Pestel of Hanover University in West Germany—are stressing their differences with the Meadows approach and are actively seeking to interest public officials in their theories.

Mesarovic and Pestel argue that the demographic doomsday projected by the earlier report can be averted through balanced economic growth and scientific planning throughout the world.

**Computer Models**—The authors have demonstrated their computerized models of the world food and energy situations to European parliamentarians, have held private discussions with Belgian and Dutch government leaders, and have talked to Iranian officials about the use of computerized futurology in government planning.

Mesarovic and Pestel also plan to visit both Moscow and Washington, and are seeking working arrangements with the West German government and Common Market officials.

They hope to introduce their models of world economy, energy supply and demand, food, water, climate

and other economic and ecological conditions into the political decision-making process.

European politicians who participated in a demonstration of the models in Hanover came away with the impression that the new techniques could become working tools.

"You cannot exchange a political decision for a technical one," said one Dutch official at the gathering, "but in making a political decision you need the facts."

He called the models an "instrument to see the consequences of our choices." A Danish participant suggested all parliaments should be linked via telex to a central computer to test the probable results of the political programs they are considering.

**"Organic Growth"**—Mesarovic and Pestel advocate a policy of "organic," or balanced, growth, rather than "zero growth." They feel that only properly mixed economies, even in the developing countries, can survive. They propose a mixture of investment, financial aid, diversified food and industrial production, population planning and new international institutions to formulate world master plans.

For example, the authors project that if nothing is done concerning food supplies in South Asia, mass starvation will accelerate near 1980, reaching a rate of 30 million deaths per year.

What they call short-term solutions—such as abandoning showcase industrial projects in favor of food production—would lead to an initial increase in food output which would later decline because of the lack of a developed economic base to finance a domestic or imported food supply.

(continued next page)

\*Published in the US by E.P. Dutton and Co./ Readers Digest Press, New York. 208 pages, cloth-bound \$12.95, paperback \$4.95.

### Meadows Comments . . .

The author of "Limits to Growth," Dennis Meadows, told *World Environment Report* he believes the Mesarovic and Pestel models are a refinement beyond the ones he used and are therefore "closer to relevant."

But Meadows questioned the concept of "organic" growth, which he said might better be called "differentiated" growth, and said the second report really supports his earlier finding—uncontrolled growth of any kind cannot go on forever.

Meadows also pointed out that the Mesarovic and Pestel models are not complete, failing, for example, to consider the effects of their projections on environmental deterioration.

However, the accuracy of models is not the issue, according to Meadows. Rather it is how to get those in power to recognize the long-range

effects of today's policies. But Meadows is sceptical about the chances of really influencing the bureaucrats of today, who he believes are not interested in long-range consequences.

"No government will seriously use these models," he said. "Governments don't care about starvation, except as it affects current political considerations."

The only hope, Meadows went on, is the impact of these ideas on the current crop of students. He believes there are signs this impact is becoming significant.

In a related development, Meadows told *World Environment Report*, Sicco Mansholt, former President of the Commission of the European Common Market, has been assigned the task of developing a political program based on the concept of "Limits to Growth" for the Socialist International, a coalition of European socialist parties. Mansholt is a vice chairman of the group.



**Energy Supply**—The authors feel that both consumers and producers of energy now accept their interdependence and are beginning to cooperate. But the drive toward nuclear power is a "Faustian fix," according to the authors, that might be both impractical to finance and dangerous to the environment.

They advocate instead large-scale development of solar energy "farms," mainly in the Middle East oil producing regions, to supplement dwindling petroleum deposits. Mesarovic and Pestel warn of "heat island" effects associated with large nuclear developments, and add that oil exploration in the Arctic Ocean could lead to leaks that would melt the ice and cause drastic change in climate.

DAVID FOUQUET

## US Cuts UNEP Funds— Some Chance of Restoration

**WASHINGTON**—The final version of the US foreign aid bill for Fiscal 1975 (which began last July) approved by Congress last month contained only a \$5 million appropriation for the United Nations Environment Fund.

This amount is one-half the Administration's request of \$10 million. The Administration may attempt to restore some of the slashed funds in the supplemental budget request expected to be made soon, or in the interim budget request that will be made to cover the period between July 1 and October 1. The interim results from the changeover to an Oct. 1 fiscal year basis beginning this year.

For Fiscal 1976, which begins Oct. 1, President Ford has requested \$7.5 million. The US pledged to contribute 40 per cent of the Fund's income over the five-year period 1973-77, or about \$40 million.

There was little discussion of the UNEP Fund during debate on the aid bill, and the State Department did not assign it high priority in its lobbying efforts. There was some criticism expressed in the House at UNEP's failure to spend the funds it has already received, while suggestions were raised in the Senate that the US pledged share is too large.

## Hong Kong to Spend Millions For Refuse Disposal

**HONG KONG**—A team of government-commissioned consultants has recommended a \$23.13 million program to take care of Hong Kong's refuse disposal problem through 1984.

The program involves construction of two compost plants, a refuse baling plant, a refuse transfer depot and a new controlled land fill much larger than the one currently in use at Gin Drinker's Bay.

Funds have already been provided for drawing up the

specifications for one of the \$4 million compost plants. The plant will convert refuse—through a biological process that kills the pathogenic organisms—into non-offensive material that can be used as a soil conditioner and dumped anywhere without cover. If the plan moves ahead, the plant will be in operation by 1977.

Government officials are proposing that the second compost plant be built with a start-up target date of 1980. Funds are being sought for the baling plant. The other facilities for handling Hong Kong's waste would be implemented in stages between now and 1980.

## Environment Board Recommended for Pakistan

**ISLAMABAD, Pakistan**—The International Conference on Management of the Environment, held recently at Karachi, recommended the establishment of National Environmental Boards (NEB) for the study and control of air, water, soil and food pollution.

A total of 48 recommendations came out of the three-day conference which was organized by the Pakistan Academy of Sciences. Experts attending the meeting included those from Pakistan, Iran, Turkey and the US.

The Conferees recommended better regulation of investment programs which appear to foster unhealthy expansion of a few large metropolitan centers. They urged expanded use of mass transit in urban areas, and the establishment of university environmental departments.

It was urged that due consideration be given to optimum city size, and new definitions of urban and rural areas arising out of the distribution of labor when preparing national plans.

## Oil Company Wages Bird War

**BOGOTA**—The Colombian oil enterprise, Ecopetrol, has declared war on thousands of swallows nesting in its refining facilities at Barrancabermeja in northern Colombia.

Ecopetrol engineers report that the birds cause short circuits, frequently setting off automatic controls and alarms, and leave "corrosive crusts" on the processing plant towers.

Several thousand swallows have been killed by poisonous gases. Steam and water jets have also been used to dislocate the birds, but the swallows return.

Local conservationists severely criticize Ecopetrol's campaign, claiming that the swallows are harmless and help control insects. Colombia's leading ornithologist, Father Antonio Olivares, denounced the swallow purge as a "terrible crime." He says the swallow invasion at Barrancabermeja is the result of winter destruction of the swallows' mountain and river bank nests.



## Briefs...

### Irish To Expand Effluent Testing

The Irish National Institute for Industrial Research and Standards will spend about \$360,000 to expand its industrial effluent testing laboratories at Shannon.

The expansion was announced following the completion of a nationwide survey of wastes produced by industry, agriculture and domestic sources. The survey, which is now being studied by state officials, will be used to establish a national pollution baseline.

During the past two years, on the advice of the Institute, at least six high-pollution industries have been refused permission to locate in Ireland.

Dr. Tom McManus, head of the Institute's chemical engineering department, said the institute had advised against the industries because their waste products could not be controlled by modern technology, or because the companies were unwilling to spend enough money on pollution control.

### Danish Industry Spends \$17 Million on Environment

During 1974 Danish industry spent about \$17 million on environmental protection, according to a survey made by the Danish Statistics Institute and the Environment Ministry.

Planned spending for 1975, according to the survey, is about 48 per cent more than in 1974, but it is anticipated that this estimate will not be realized because of the current economic pinch.

The chemical industry spent most in 1974, followed by the food, beverages and tobacco industries, the survey showed. There were large differences in the way the money was spent from industry to industry. The food and beverages industry

spent mostly for water purification; the chemical industry spent for air pollution control; while the metal industry spread its investment over water, air, and the elimination of noise.

### Liberian Water Resources

The Liberian Hydrological Service and the Public Utilities Authority of Liberia are studying the possibility of supplementing surface water with ground water during the dry season.

Officials hope to learn more about the ground water potential in the Monrovia area through the study, thus developing a frame of reference for future explorations.

The Hydrological Service is a newly formed government agency designed to study Liberian water resources with an eye to possible use of the water for human consumption, industry and agriculture.

### Protection For Sri Lanka Coast

A \$150,000 coastal protection project designed to stop massive erosion of Sri Lanka's shoreline has been announced by P.B.G. Kalugalla, Minister of Shipping and Tourism.

Conservationists say the erosion is caused by uncontrolled exploitation of the natural coral reefs surrounding Sri Lanka, and by mining of the beaches for sea sand.

Legislation to protect the shoreline is presently in draft and will be presented to Parliament soon, a government spokesman told *World Environment Report*.

### Palm Leaves Act as Weedicide and Fertilizer

Farmers in Sri Lanka's arid northern region are using the leaves of the abundant palmyrah palm as an organic weedicide and fertilizer.

The large fan-shaped fronds,

which sometimes cover several square feet, are spread mat-like on land waiting to be cultivated and left undisturbed for several weeks. The natural cover kills grass and weeds.

Then, when the ground is broken up for planting, the palmyrah leaves are buried to provide a compost.

The leaves of about 100 palms—25 fronds may safely be taken from one tree—are sufficient to prepare a quarter acre of land, Jaffna peninsula farmers say.

### Illegal Buildings Demolished in Rome

In a blow to illegal building, Rome officials have issued 20,000 demolition orders during recent weeks.

Some of the orders will wipe out a single story added to a medieval house. Others will destroy large buildings constructed on land originally destined to become a playground. One residential complex capable of housing 350,000 persons has been impounded by the courts, as have 200 luxury villas built between Rome and the sea.

There are however, no plans reported to destroy the illegal Roman slum skyscrapers that house an estimated 700,000.

Owners will be required to bear the cost of demolition.

### South Korea To Build New Dams

The South Korean government is planning to build seven multi-purpose dams by 1980 to meet the rising demand for industrial water and electricity.

The dams are to be constructed at Andong, Taechong, Hyochon, Imgye, Yoju, Tongbok and Taechon.

The government plans to invest some \$20 million in the Andong dam, which is scheduled to be completed by 1976.

Work started last month on the construction of the dam at Taechong, which will cost an estimated \$84.9 million and be completed by 1979.



## German Waste Exchanges

A system of industrial waste exchange is significantly cutting the volume of these wastes that must be disposed of in West German municipalities.

The exchanges act as brokers for firms wishing either to buy or sell for recycling purposes such indus-

trial wastes as rags, sawdust, drilling emulsions, plastics, carburizing agents and dry carbide.

Initiated two years ago by the Hamburg Chamber of Commerce, the exchanges collect and distribute information based on questionnaires about the nature of the wastes, cost, volume, shipping requirements and terms of delivery.

Although the exchanges operate primarily within their home states, the information is collated periodically at a national headquarters in Duisburg for nationwide reference.

The City of Munich, which used to dispose of 600,000 cubic meters per year of this sort of waste, has cut the amount in half since its waste exchange was established.

## Calendar . . . .

**May**—Second Council of Europe meeting to exchange information on national regulations and practices regarding air pollution, Strasbourg, sponsored by United Nations Environment Programme.

**May 5-7**—Sector Group on Urban Environment, Paris, sponsored by Organization for Economic Cooperation and Development.

**May 7-10**—Conference on Population Growth and Rural Development, Kampala, Uganda, sponsored by Eastern Africa Agricultural Economic Society.

**May 11-17**—Ninth meeting of Permanent Council of the World Petroleum Congress, Tokyo.

**May 13-16**—Third International Ocean Development Conference, Tokyo.

**May 12-15**—First International Symposium on Acid Precipitation and Forest Ecosystems, Ohio State University, Ohio.

**May 12-16**—Advisory Group on a Code of Practice Covering Waste Management in the Uranium and Thorium Mining and Milling Industry, Romania, sponsored by International Atomic Energy Agency.

**May 12-16**—Advisory Group on the Monitoring of Radioactive Gaseous and Liquid Effluents, Turkey, sponsored by International Atomic Energy Agency.

**May 18-23**—Pollution Engineering and Equipment Expo and Conference, New York.

**May 20-21**—Conference on the Methodology of Energy Resource Assessment, Austria, sponsored by International Institute for Applied Systems Analysis.

**May 20-23**—Ad-Hoc Meeting on the Prevention of Pollution by Inland Navigation, Geneva, sponsored by Economic Commission for Europe.

**May 22-23**—Ad-Hoc Group on Wetlands, Strasbourg, sponsored by Council of Europe.

**May 26-28**—General Assembly and Technical Meetings on Reclamation Materials, Stockholm, sponsored by International Reclamation Bureau.

**May 28-30**—Sector Group on Unintended Occurrence of Chemicals in the Environment, Paris, sponsored by Organization for Economic Cooperation and Development.

**May 29-30**—Ad-Hoc Group on Natural Areas, Strasbourg, sponsored by Council of Europe.

**June 2-4**—Tenth Meeting of the African Regional Group of the UN Advisory Committee on the Application of Science and Technology to Development, Addis-Ababa, sponsored by Economic Commission for Africa.

**June 2-6**—International Symposium on the Combined Effects of Radioactive, Non-Radioactive and Thermal Releases to the Environment, Stockholm.

**June 2-7**—The Baltic and International Maritime Conference, Helsinki.

**June 4-6**—International Conference on Environmental Policies, Frostauallen, Sweden, sponsored by Nordic Council.

**June 5-8**—"Earthcare," conference on the preservation of natural areas and urban open spaces, New York, sponsored by Sierra Club and National Audubon Society.

**June 9-13**—European Technical Conference on Leisure and Natural Conservation, Strasbourg, Sponsored by Council of Europe.

**June 9-13**—Third Session of Group of Experts on Aspects of Water Quality and Quantity, Geneva, sponsored by Economic Commission for Europe.

**June 15-20**—Panel on International Cooperation in Air and Environmental Control Efforts, Boston, sponsored by Air Pollution Control Association.

**June 16-20**—Advisory Group on Isotopic Tracer-Aided Studies of the Mechanisms of Inland Water Eutrophication, Vienna, sponsored by International Atomic Energy Agency and Food and Agriculture Organization.

**June 16-20**—Fourteenth Session of the European Committee for the Conservation of Nature and Natural Resources, Strasbourg, Sponsored by Council of Europe.

**June 17-19**—Seminar on Industrial Environment, Norway, sponsored by the Nordic Council.

**June 30-4 July**—International Symposium on Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environment, Otaniemi, Finland.

For further information, contact the Center for International Environment Information.





# World Environment Report

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MARCH 31, 1975

## Strong Intends to Stay at UNEP

Maurice F. Strong now intends to remain at his post at least through 1975 and possibly even longer. The Executive Director of the UN Environment Programme has so advised his senior staff as well as officials of several Western governments. Strong was elected Executive Director by the UN General Assembly in December, 1972 for a four year term.

## Common Market Will Consider Wide Range of Environment Laws

**BRUSSELS**—The European Common Market's Executive Commission plans to introduce more than 20 legislative proposals during 1975 dealing with environmental matters.

Because of their technical or controversial nature, some of the proposals will require lengthy study by the EEC Council of Ministers, while others may be shelved. There is already a backlog of proposals awaiting action, but Commission officials are anxious to introduce the basic legislation for their new proposals as soon as possible so that implementation of the EEC joint environmental program may begin.

According to Francois-Xavier Ortoli, president of the Executive Commission, the proposals during the first half of 1975 will include standards for fish and shell-fish breeding, additional curbs on pulp and paper mills and a draft accord against pollution arising from exploitation of the seabed.

**Air Pollution and Noise**—The proposals will also deal with measuring the impact on human beings of atmospheric pollutants such as carbon monoxide, lead and sulphur dioxide, and will include a directive on the sulphur content of heavy fuel oils.

Various proposals for dealing with solid waste management are foreseen by Ortoli during the first half of this year, as well as criteria on the effects of noise on humans and noise standards for construction equipment, lawn mowers, two-wheeled vehicles and aircraft.

The Commission will also seek methods for evalu-

ating the costs of pollution control in industry and for exchanging environmental information.

In the third quarter, the Commission will draft guide lines for exchanging information gathered by water monitoring networks and will prepare proposals dealing with thermal releases from electric power plants and with the iron and steel industry.

In the fourth quarter, according to Ortoli, the Commission will submit legislation on harmonizing laws that establish legal responsibilities of polluters, not only within their countries of origin, but also in neighboring states. Another proposal will seek to harmonize EEC national laws on protecting endangered species. Regulations will also be drafted to deal with drinking water and agricultural use of water.

One far-reaching measure, expected toward the end of this year, will be the establishment of an EEC office to approve new chemical substances. Another would create a pilot program for environmental education in primary schools.

DAVID FOUQUET

## Environment Is Key Issue as U S Firms Vie for Colombian Coal

**BOGOTA**—Two of the world's major multinationals are competing for the right to exploit the richest coal field in Latin America in an unusual debate over environmental alternatives.

In contrast to the average Latin American mining contract, the Colombian government is insisting on environmental safeguards in the development of the Cerrejon coal fields on the Guajira Peninsula in north-east Colombia. The rival companies, Kennecott Copper and Exxon, are emphasizing examples of their good works in other countries in their keen competition for the fields.

(Continued next page)

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Peabody Coal Co., a Kennecott subsidiary, already has a contract with the state Industrial Development Institute (IFI) to explore 25,000 acres of the 135,000-acre fields, but surveys show that an important part of the richest deposits lies just outside the concession. Exxon's Colombian subsidiary, Intercol, has applied for these fields in partnership with the state oil enterprise, Ecopetrol.

**High-Quality Coal**—Cerrejon contains 90 million tons of proven reserves and 170 million tons of possible reserves only 80 km. from the Caribbean coast. Although it is not suitable for coke, the coal is high-quality bituminous fuel with less than six per cent ash and less than one per cent sulphur. Heating value is a high 13,000 Btu per lb.

Several U S companies have already expressed interest in long-term purchase contracts for this coal when the fields come into production in 1982. Among them is Florida Power and Light, which will convert to coal by 1981.

The Cerrejon fields are only one of several major coal deposits in Colombia, which possesses 66 per cent of Latin America's coal reserves. But only now, with the so-called energy crisis, has the Colombian government taken a serious interest in their development. Brazil would also like to buy large quantities of Colombian coal.

**Pilot Project**—As the first major exploitation, Cerrejon will serve as a pilot project, and the government is therefore concerned about its environmental impact. This concern is relatively new here, paralleling the recent adoption of a sweeping environmental code (*WER*, Feb. 17, p. 5) and increased public concern over pollution.

The Ministry of Mines and Energy will oversee Cerrejon's development, but the decision on the concessionaire may go as high as President Alfonso Lopez Michelsen.

As an opening salvo, Exxon imported a film on its land reclamation efforts in Wyoming to be shown by Ecopetrol officials just as Peabody's executives were arriving to discuss their contract with the government.

**Strip Vs. Underground**—Mines and Energy Minister Eduardo del Hierro has stated that the environment will be a key factor in choosing between strip and underground mining. If strip mining is chosen, because of cost, the government will demand that studies of land reclamation be undertaken simultaneously with the development.

A dry brushland inhabited mainly by the nomad Guajira Indians, the Cerrejon could be reclaimed for agriculture by harnessing the region's waterways. The government will attempt to ensure that the Rancherías and other nearby rivers are not polluted by the mining operations.

PENNY LERNOUX

## Action Urged on Parks In South Pacific

*WELLINGTON, New Zealand*—A conference on national parks and reserves in the South Pacific has urged governments to emphasize local traditions and customs that respect the environment.

The four-day conference here was sponsored by the New Zealand government, the South Pacific Commission and the International Union for Conservation of Nature and Natural Resources (IUCN), with support from the United Nations Environment Programme (UNEP).

Conference delegates recommended that South Pacific governments:

Feature traditional arts, crafts and practices in planning and operating national parks;

Enable indigenous peoples to bring their lands under protection as national parks or reserves without relinquishing ownership;

Establish national parks and reserves in which members of isolated indigenous cultures could maintain their isolation for as long as they wished;

Examine the possibility of establishing one or more world parks in the South Pacific to protect significant marine ecosystems and introduce this proposal at the Law of the Sea Conference now underway in Geneva;

Take urgent action to protect specified endangered bird species;

Explore the possibility of common action to condemn the illegal taking of fish and other marine resources;

Ensure that all development projects are carried out in a manner that reduces environmental impact to a minimum and that cost of remedial action is borne by developers.

The conference decided to undertake a survey of South Pacific areas needing protection. This will be a joint venture of UNEP, IUCN and the South Pacific Commission.

A second conference will be held in Australia in 1979.

J.A. KELLEHER

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## Special Report: Taiwan Faces Growing Pollution Problems

The great industrial cities of Japan, some regions of South Korea and some sections of Shanghai in the Peoples' Republic of China are the only locations in Asia with worse pollution problems than Taiwan.

Pollution in Taiwan results from rapid urbanization, industrialization and population growth. The growing application of chemical fertilizers and pesticides and the increase in vehicular and air traffic also play a significant role.

Legislation for a Taiwan Environmental Protection Agency has been drafted, but is not yet law. Regulatory laws on water, solid waste and air pollution are on the books, but enforcement has been within the purview of the National Health Administration, which has not assigned high priority to enforcement.

**Population Explosion**—Probably the most striking factor in Taiwan's environmental problems is its burgeoning population. The population was 15 million at the end of 1973 and it is projected at 18 million by 1980. The urban population will increase from 51 per cent in 1970 to 67 per cent in 1980 and about 74 per cent by 1990.

Municipal facilities are not capable of supporting this rapid growth. Housing, recreation, water supply, refuse disposal, roads and transportation will become inadequate. Careful planning will be needed to prevent a deterioration in living conditions and to control air, water and soil pollution.

While major steps to assess air pollution problems have yet to be introduced, some aspects of environmental quality have been monitored since 1961. The concentration of carbon monoxide in the atmosphere of Taipei City does not meet accepted safety standards, pointing to an urgent need to control vehicular exhaust.

In the past, major air pollutants came from burning soft coal, but since 1967 local governments have set up control areas banning soft coal burning.

**Water Pollution** — Water pollution has not yet reached serious contamination levels, but the quality of river water in general has deteriorated. All domestic sewage and industrial wastes go directly into

the rivers without prior treatment. Because the rivers in Taiwan are short and fast-flowing, there is no substantial dispersal of wastes before they wash out to sea.

All waste water in Taiwan's five largest cities is discharged this way through one or two rivers: Taipei through Tamsui River, Keelung through Tienlau and Shichuan Rivers, Taichung through Luchu River, Tainan through Anpin River and Kaohsiung through Ai River.

This type of disposal complicates the problems of coastal cities that have to contend with oil spillage from ships.

**Irrigation Dumping**—The dumping of municipal and industrial wastes into irrigation waterways is related to Taiwan's soil pollution. In some cases, farmers are glad to utilize the organic liquid wastes from industrial plants for their crops. However, there have been several conflicts between farmers and factories over crop damage caused by large amounts of nitrogen in the soil as well as emissions of sulphur oxides from sulphuric acid manufacturing and power plants.

One other element contributing to soil pollution is the growing use of chemical fertilizers and pesticides. Taiwan's agricultural authorities have set up 20 control stations in Taipei City and the southern part of the island to check the problem. Furthermore, the use of pesticides containing organic mercury and DDT has been banned.

**Financing Pollution Controls**—According to Chuang Chin-yuan, director of the Environmental Health Bureau of the National Health Administration, the capital city of Taipei alone will require \$4 billion to implement effective pollution control within the next decade.

The ultimate aim is to strike a balance between industrialization and environmental protection, but, as in many developing nations, the government of Taiwan refuses to commit huge sums of money to environmental control measures at the risk of curbing national development.

ARTHUR MILLER

## New Coal for Pakistan

*ISLAMABAD, Pakistan*—A newly discovered 260-million-ton deposit of low quality coal in southern Pakistan, if processed, could totally meet the country's energy requirements for 80 years, but would add to the air pollution problem.

Pakistan presently imports 90 per cent of its petroleum from the Middle East. During fiscal 1974-75 this

cost \$387 million, or nearly 33 per cent of the country's foreign exchange earnings.

Geological Survey of Pakistan officials say that the installation of equipment and machinery to remove sulphuric acid from the coal would be relatively inexpensive.

In Kandhkot, located in southern Pakistan, deposits of natural gas large enough to operate a fertilizer factory for 50 years have also been discovered.



## Offshore Oil Drilling: Full Impact Is Still in Doubt

**NEW YORK**—Over 80 countries throughout the world are turning to the seabed for oil, the last major unexploited source of petroleum. But some experts in environmental science warn that not enough is known about the long-term effects of offshore drilling to ensure protection of either marine organisms or the adjacent onshore environment.

"We're attacking our last bastion, but we don't really know if it will affect the marine ecosystem," Kenneth Adams, a fisheries biologist for the U.S. Environmental Protection Agency told *World Environment Report*.

Adams said that EPA is developing effluent guidelines regulating offshore platform discharges containing non-soluble oil fractions. These platforms must now meet the somewhat less stringent U.S. Geological Survey regulations.

The brines constantly discharged from oil rigs contain soluble hydrocarbon fractions that cannot be removed by current technology. These fractions are far more hazardous to the environment than the removable oil, according to Adams.

Dissolved fractions are suspected of causing precancerous lesions in marine life, Adams said. "No one is doing research on the cancer aspect anymore," he added.

These dissolved fractions also are known to affect marine animals' sense of smell, on which they depend

for survival. Smell is relied on for mating and feeding and warns them of imminent danger.

**World Production**—More than 18 per cent of world oil production in 1974 came from offshore fields and over 50 per cent of global reserves are under the seabed, according to estimates presented at last year's Law of the Sea Conference in Caracas.

Major offshore operations are underway in the North Sea, Persian Gulf, off Indonesia and Nigeria, in the Gulf of Mexico, the Australian Bass Straits and Lake Maracaibo in Venezuela. More than 80 countries are now leasing offshore areas, and oil exploration and drilling are moving into deeper and deeper waters.

Regulations governing drilling operations vary from country to country. The U.S. and Canada have the most stringent requirements, while northern European and Australian governments are developing similar ones. Some countries have not yet imposed stringent controls however.

**Chronic Effects**—Ellen Winchester, chairwoman of the Fossil Fuel Subcommittee of the Sierra Club's National Energy Policy Committee which is composed of scientists and experts in the field, told *World Environment Report* that chronic low level discharges from offshore rigs could have serious effect on marine biota and have not been properly studied. She said the effect of the

### Where They Are Drilling

Here is a roundup of activity in some of the major offshore areas:

**Indonesia**—Indonesia has not adopted strong regulations, and coastal areas in the direct path of currents from rigs north of Jakarta are reported to be severely polluted.

An estimated 40 offshore wells will be drilled in Indonesian waters this year under the guidelines of a government agency, the Committee on Offshore Oil and Pollution Standards. However, this committee is inactive and its guidelines are generally not enforced. Government policy appears to favor intensified exploration, with environmental impact assigned a low priority.

**North Sea**—The North Sea is one of the fastest developing offshore areas, with British, Norwegian and Dutch leasing taking place. In the British sector alone, operating companies number more than 15.

North Sea weather conditions are turbulent, and many rigs are operating at maximum feasible depths. Waves often reach a height of 20 feet, and winds are strong.

By the mid 1980's, the North Sea is expected to be producing four million barrels per day, about twice current British consumption. Weather permitting, the first British oil is expected in May from the Hamilton consortium's rigs in the Argyll field. Argyll is one of the smaller fields, and its output will be carried by tanker to refineries on the Tees River or to a British Petroleum refinery at Grangemouth.

**Onshore Activity**—Another aspect of North Sea activity is the dredging and construction required for onshore support facilities. More than 200 oil-related companies are now based in Aberdeen, Scotland, and employment related to the offshore work has risen from zero to 6,500 in less than three years. According to Norman Beattie, general manager of the Aberdeen Harbor Board, this figure will reach 8,000 by the end of this year.

In 1969, there were 259 arrivals of rig supply vessels at Aberdeen; in 1973 there were 1,720 and in the first nine months of 1974, 1,946.

The British government is financially over-extended, with unprecedented borrowing to meet the high cost of imported oil. Therefore, the British are anxious to have maximum oil flowing from the North Sea in the minimum time.

British environmental agencies are fatalistic about spills. One spokesman said "Such concentration of activity in a relatively small area seems to make inevitable an oil spill of one type or another, whether from a damaged tanker or a burst pipeline."

Such a spill could have major consequences because the prevailing wind and tides could carry it westward to the Shetland Islands, home of Britain's largest seabird colonies.

**Venezuela**—Lake Maracaibo supplies 87 per cent of the oil produced in Venezuela. A recent study contracted by Creole, Exxon's local subsidiary, indicates that, despite surface slicks, suspended bituminous particles and bituminous material on the bottom, the water is mostly free of hydrocarbons. This is attributed to the lake's high recuperative powers. None of the six commercial varieties of fish analyzed were found to be contaminated by petroleum.



discharges being washed into adjacent coastal waters and estuaries, where young marine life is especially sensitive to changes in the chemical structure of its environment, had likewise not been studied.

The Sierra Club is demanding broad-based environmental studies, Winchester said. Through careful selection of priorities, she thinks conclusive answers could be available from such studies within two years.

Oil company spokesmen, however, say that offshore wells have little if any impact on the marine environment. A spokesman for Exxon told *World Environment Report* that the company's rigs maintain the same high standards worldwide, regardless of varying country standards.

According to experts, seepage from offshore rigs accounts for only about two per cent of the oil present in the sea; the majority is thought to come from tankers.

A draft University of Delaware Sea Grant Program report quotes a Bureau of Land Management estimate that about 0.011 per cent (or 280,587 bbl) of the total outer continental shelf production of oil was spilled in the Gulf of Mexico from 1964 to 1972.

**Typical Well Discharge**—The Sea Grant report says "a typical 10,000-foot offshore exploration well will generate approximately 2,100 bbl of cuttings weighing about 1,840,000 lbs. The total weight of cuttings and drill mud discharged overboard is some 1,173 tons per well."

In California, according to the report, benthic (bottom-dwelling) communities establish in these materials, where no community existed before.

A volume of 420,000 bbl of formation waters is produced daily by the average well, the report says. Of this amount, 240,000 bbl are transported to shore for treatment and released, while the remaining 180,000 bbl are treated and discharged near the platforms. Tests in Louisiana found this water to average 112,513 mg solids per liter of water. Ocean salt water averages about 35,000 mg/l.

**Data Source**—One issue that remains controversial to many observers is the fact that most of the information available on offshore deposits and drilling comes from oil industry sources. The U.S. Geological Survey, for example, relies heavily on industry data in determining which areas of the outer continental shelf should be offered for lease. The companies are not required to make all their information available to USGS.

Most environmental advocates would prefer that USGS conduct its own independent studies.

Caught in the squeeze between international oil prices and rising energy demands, countries around the world are turning more and more to their continental shelves for petroleum. Environmental groups urge caution and further study, but the opinion of the petroleum industry and many government officials is that enough is known already and development should forge ahead. SD

## Malacca Strait Countries Act on Tanker Traffic

**SINGAPORE**—Representatives of the three countries bordering on the Strait of Malacca met here last month to establish controls that would ensure navigational safety and control pollution in the narrow but heavily used straits.

Meeting in the aftermath of the grounding of the 237,000 ton Japanese tanker *Showa Maru* in January, officials from Indonesia, Malaysia and Singapore agreed to establish a council on safety of navigation and control of maritime pollution in the strait at the ministerial level. The three governments also agreed to take steps toward a traffic separation scheme under which the strait will be divided into two lanes to separate the vessels moving from west to east from those going the opposite way.

But the meeting stopped short of the more drastic measures favored by the Indonesian government—limiting the draft and tonnage of ships passing through the strait and making the supertankers follow a longer route south of Java and through the Straits of Lombok and Makassar.

The Indonesians would like to ban passage through the Strait of Malacca to ships in excess of 200,000 deadweight tons or with a draft greater than 18.9 meters when fully loaded. (The strait is 23 meters deep at its shallowest.) They are expected to pursue this goal at the Law of the Sea Conference now underway in Geneva. Even if the Indonesians succeed in establishing their stringent restrictions, however, they do not have the means to enforce them or to effectively patrol the area.

All three governments did agree that the liability limits now in effect for tanker spills are inadequate and they will seek to have them discussed in Geneva.

**Cleanup Costs**—For the *Showa Maru* spill, Indonesia has submitted a bill of \$18 million and Malaysia of \$10 million as compensation for damages done to the environment and marine life. Singapore has not yet submitted its bill, but the Port Authority of Singapore, which was in charge of cleanup, has drawn up charges of \$1.7 million against the ship's owners to cover the cost of tugs, fire boats, manpower and dispersants. Aircraft were also deployed, as were units from the Defense Ministry and the Ministry of the Environment.

The three states will meet again in Tokyo in April to assess the hydrographic surveys now being conducted.

**Japanese Concern**—Japanese shipping authorities and tanker operators are worried that Indonesia might prevail in the further meetings.

More than 4,200 ocean-going tankers passed through the Strait of Malacca in 1974, with about 1,700 of them being Japanese. Of these about 70 fall into the very large crude carrier (VLCC) class and would be diverted



to the Lombok strait under the Indonesian plan.

Use of the Lombok would mean a detour of 1,600 km and nearly three days in time, for an estimated cost increase of \$800,000 per ship per year. About 80 per cent of Japan's annual 1.6 billion barrel consumption of oil now passes through the Strait of Malacca.

To forestall the more drastic action, Japan's Maritime Safety Agency is assisting in detailed surveys of all the waters involved. Total costs of the surveys will be about \$1.3 million, financed mainly by a Japanese government sponsored corporation and an association of private shipping firms.

**Tanker Safety**—There appear to be no thoughts in Japan that the supertankers being built in domestic yards are too big or that they should be designed with greater safety features. The shipbuilders contend that installing double bottoms on these ships would not do much to reduce spills and would actually create the danger of explosion due to gases collecting between the hulls.

Tankers with double bottoms would cost at least 10 per cent more to build and 25 per cent more to operate than the single-hull vessels, according to the shippers.

A. E. CULLISON, PANG CHENG LIAN, JUDY BIRD WILLIAMS

## Private Incinerators Rain Soot on Buenos Aires

**BUENOS AIRES**—The municipal government is seeking ways to reduce the 11 tons of particulate pollution poured on this city every day from more than 16,000 private apartment house incinerators.

Some members of the city government would like to outlaw the incinerators altogether, but this would mean a 36 per cent increase in the refuse collected and transported to the large municipal incinerators.

In response to the concern over private incinerators, the municipality has stepped up its garbage collections—adding 35 trucks in January, with 65 more to follow—and has hired 2,000 more street sweepers. A second large municipal incinerator was inaugurated in February. It will burn 1,000 tons of refuse per day, about 50 per cent of that collected from residences. Together with the first incinerator, the municipal government hopes to burn 2,200 tons per day of garbage, with a third large incinerator to follow. This will reduce reliance on private incinerators.

The city hopes to cover some of the \$15 million cost of the new incinerator by salvaging metals from the residue and selling the ashes for fertilizer.

The final approach has not yet been decided. Some elected representatives urge that the incinerators be replaced with garbage compactors, while others back mandatory installation of filters or scrubbers.

## New Pollution Bill Before Irish Parliament

**DUBLIN**—The government of the Irish Republic put before Parliament its new pollution control bill (*WER*, Feb. 3, p. 1) and has also proposed legislation to protect the country's wildlife.

**Industrial Development**—The pollution bill would put environmental restrictions on new industrial development, particularly so-called "dirty" industries such as oil refineries and smelters.

The proposed bill, which covers air and water pollution, solid wastes and recycling, would establish an Interdepartmental Environmental Committee to formulate national environmental policy. Developers of industrial projects, or other development plans, would be required to set forth formally the possible environmental impact resulting from their work.

According to James Tully, Minister for Local Government, who is responsible for environment, the bill would give the Republic the foresight to "avert what many countries are trying to undo only now, with the costly benefit of hindsight."

Meanwhile, the country's existing planning laws (*WER*, March 3, p. 3) are being implemented. The Irish Institute for Industrial Research and Standards has given planning approval to a chemical plant proposed by Schering Plough, Inc. of New Jersey for construction at Killaloan, Clonmel, in Tipperary. But the institute imposed thirty environmental conditions on the plant ranging from exhaust fume control and chimney height to the color of the buildings.

**Wildlife Protection**—The government is also proposing new legislation to protect the country's wildlife. It would give the Minister for Lands control of hunting on state-owned land, fishing on inland lakes and lake-shores and in territorial seas.

All wild birds, except species considered pests, would be protected, with special attention for those in danger of extinction, including buzzards, eagles, falcons, harriers, hawks, kites and owls. Also protected will be endangered animals including pine marten, red deer, seals and whales. The Minister will have discretion to license otter and stag hunting.

Infringements of the regulations would be punished by fines up to \$1,200 and confiscation of firearms and revocation of licenses.

**Recycling**—The government is also drawing up proposals to encourage recycling of waste products and recovery of valuable materials.

Already one company has been established with a grant from the government's Industrial Development Authority to recycle old and abandoned vehicles.

TOM MacSWEENEY



## Briefs...

### Pollution Control Spending On the Rise in Japan

Japanese orders for industrial pollution control equipment increased 35 per cent in 1974 over 1973 to a total of \$2.2 billion, according to the Japan Society of Industrial Machinery Manufacturers.

Orders for smoke desulfurizing equipment increased five-fold to \$558 million, while other air pollution control equipment reached \$1.2 billion, a 40 per cent increase.

Liquid waste treatment equipment orders reached \$274 million, while solid waste disposal systems reached \$294 million, up 66 per cent.

For municipal wastes, orders reached \$234 million, only 13.3 per cent of the industrial orders.

While most Japanese industries are suffering from the recession, the pollution control sector continues doing brisk business, with many new firms entering the field.

### Emscher Co-op Marks 75th Anniversary

The Emscher Genossenschaft (Emscher Valley Cooperative), one of West Germany's most successful pollution control undertakings, has celebrated its 75th anniversary.

The Emscher River runs less than 60 miles through Germany's industrial heartland from its source near Dortmund to discharge into the Rhine. Never big enough to supply water for the cities and industries in its valley, the Emscher was at least able to carry their wastes.

But by the turn of the century, when the Co-op was founded, industrial expansion and subsidence due to coal mining had destroyed the drainage system and turned the valley into a pestilential marsh.

The Co-op cut across political boundaries and not only induced local governments and industries to

abide by its waste disposal regulations, but also obtained funding from them.

The Co-op installed pumps to drain the marshes and embankments to hold the river. It has since built 19 waste treatment plants and 12 plants to remove phenol from mine wastes. Next year a biological treatment plant to give the final cleansing will start operations where the Emscher enters the Rhine. The water is expected to be of a quality to support trout.

The river still carries a tremendous load of industrial and municipal wastes. But it does so between grassy banks, it gives off no offensive odors, and it contributes to the cleaning up of the Rhine.

### New Nitrogen Oxide Standards In Japan

Japan's Environment Agency has announced new nitrogen oxide (NOX) control standards for cars effective April 1 of 1976 for new models. Imported cars will have to comply from March 1, 1978. Trucks and diesel vehicles are excluded.

The standards call for NOX emissions no greater than 0.84 gm/km for cars less than one ton and 1.2 gm/km for larger cars. Present standard is 1.60 gm/km.

Japanese manufacturers plan to install platinum catalyst converters and other control devices.

### Tankers to Carry Mineral Water

Oil-poor Brazil is negotiating an arrangement to ship mineral water to some Arab states in returning empty petroleum tankers.

According to Antonio De Oliveira Rocha, president of the India Mineral Water Co., S.A., an agreement with Kuwait is nearly complete, and shipment of water should begin by the end of 1975 or early 1976. In Kuwait, the mineral water will be

bottled and distributed to neighboring desert states.

Rocha did not specify projected volumes, but noted that individual containers to be placed in the tankers will hold 20,000 liters (5,300 gal.).

Last year, Brazil bought 75 per cent of its daily import of 600,000 barrels of oil from Arabian Gulf states.

### Criminal Penalties For Marine Pollution

The Greek government is drafting legislation aimed at imposing criminal sanctions, in addition to fines, against those responsible for marine pollution in Greek waters. The draft is expected to reach Parliament soon and become law before summer.

The law would give the Minister of Merchant Marine power to institute legal proceedings against the captain and owners of ships responsible for illegal dumping; it would also apply to coastal industries.

The only legislation now in effect in Greece regarding marine pollution stems from the 1964 international convention, which was ratified by Greece in 1966. So far, the highest fine imposed has been \$250,000—against the *Pontoporia*, which was responsible for a large oil spill near Athens last year—although fines could go as high as \$1.6 million.

The new legislation is needed, according to the government, because the increased rate of marine pollution is seriously threatening tourism, Greece's second largest source of income.

### British Urge Limit on Novel Proteins

Novel protein products derived from plant sources not previously used in human food and those derived from micro-organisms should be used for human consumption



only when they have been declared safe by an independent group of experts. This is a main recommendation in a report by the British Ministry of Agriculture's Food Standards Committee (Whitehall Place, London S.W. 1A).

The report reviews the use of all unconventional sources of protein, including textured vegetable protein and protein from microorganisms, as food or as an ingredient of food.

The report recommends that replacement of meat in meat products by hydrated novel protein be limited to no more than 30 percent of the minimum allowed meat content, and that the proportions be shown on labels. The report advises that novel proteins not be substituted for meat in school meals to an excess of 10 per cent.

### Fingerprinting Oil Slicks

No evidence has been found that oil on Spanish beaches results from exploitation of offshore oil deposits, according to the Institute of Organic Chemistry in Barcelona.

Two offshore areas near Amposta and Castellon are already being exploited while a third—offshore Barcelona—is undergoing preliminary probes.

The Institute has been sampling oil stains on the beaches near these sites, but all prove by analysis to come from other sources, probably the tankers which pass through the Mediterranean. The analysis is by a chemical "fingerprinting" method that tells the source of the sample.

Dr. Manuel Ballester, Director of the Institute, told *World Environ-*

*ment Report* he believes the Spanish drilling operations are monitored closely enough so that there is no danger of spillage.

### Haiti Rats Threaten Food Supply

The rat population in Haiti's breadbasket, the central Artibonite Valley, is increasing to the point where it is now making serious inroads into the food supply of this chronically underfed republic, according to the Organization for the Development of the Artibonite Valley (ODAV).

The rat has no natural predators in Haiti, and the ODAV is utilizing rodenticides and other controls in an attempt to inhibit the rat population growth.

## Calendar . . .

**April 7-9**—Petroleum and Environmental Conservation Symposium, Teheran, sponsored by International Petroleum Industry Environmental Conservation Association. Contact Mr. Featherstone, IPIECA, 110 Euston Rd., London NW 1, 2DP.

**April 7-11**—Ad Hoc Government Consultation on Pesticides in Agriculture and Public Health, Rome, sponsored by Food and Agriculture Organization.

**April 7-11**—Seminar on the Ecological Aspects of Economic Development Planning, Rotterdam, sponsored by Economic Commission for Europe.

**April 7-11**—26th Session of Inter-Governmental Maritime Consultative Organization's Legal Committee, London.

**April 7-13**—Third Symposium of Tropical Ecology, Lumumbashi, Zaire.

**April 9-11**—Committee of Senior Officials of the Second European Ministerial Conference on the Environment, Strasbourg, sponsored by Council of Europe.

**April 14-18**—International Symposium on Reliability of Nuclear Power Plants, Innsbruck, Austria.

**April 15-17**—Air Management Sector Group, Paris, sponsored by Organization for Economic Cooperation and Development.

**April 17-18**—Symposium on International Economic Aspects of Environment Management, New York University, New York, sponsored by Ford Foundation.

**April 21-23**—Nordforsk 11th Symposium on Water Research, Marienhamn, Iceland, sponsored by Nordic Council.

**April 21-24**—Research Coordinating Meeting on Migration and Dispersion of Radionuclides in the Terrestrial Environment, Warsaw, sponsored by International Atomic Energy Agency.

**April 23-25**—Water Management Sector Group Meeting, Paris, sponsored by Organization for Economic Cooperation and Development.

**April 24-30**—Seventh Session of Joint Group of Experts on the Scientific Aspects of Marine Pollution, London, sponsored by World Health Organization.

**May**—Second Council of Europe meeting to exchange information on national regulations and practices regarding air pollution, Strasbourg, sponsored by United Nations Environment Programme.

**May 5-7**—Sector Group on Urban Environment, Paris, sponsored by Organization for Economic Cooperation and Development.

**May 7-10**—Conference on Population Growth and Rural Development, Kampala, Uganda, sponsored by Eastern Africa Agricultural Economic Society.

**May 11-17**—Ninth meeting of Permanent Council of the World Petroleum Congress, Tokyo.

**May 13-16**—Third International Ocean Development Conference, Tokyo.

For further information, contact the Center for International Environment Information.





# World Environment Report

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MARCH 17, 1975



## Appropriations Committee Halves US Contribution to UNEP Fund

**WASHINGTON**—The House Appropriations Committee last week voted to slash the Administration's request for the United Nations Environment Fund from \$10 million to \$5 million for Fiscal 1975. The appropriation, which is part of the over-all foreign aid bill, must be acted on by the full House and the Senate.

The U.S. pledged to contribute 40 per cent of the Fund's income over the five-year period 1973-77, or about \$40 million. For Fiscal 1974, the U.S. contribution was \$7.5 million, and President Ford has requested \$7.5 million for Fiscal 1976.

State Department officials believe the action by the Appropriations Committee reflects the fact that the Fund's spending has so far fallen short of its income. For a special report on the Environment Fund, see page four.

## Pulp and Paper Cleanup Will Cost \$10 Billion

**NEW YORK**—World pulp and paper producers will have difficulty raising the estimated \$10 billion necessary to finance their pollution control installations during this decade. This is the conclusion reached in a keynote paper to be presented at the United Nations Environment Programme's Pulp and Paper Seminar this month in Paris.

In the report, John E. G. Sikes of Beak Consultants Ltd., Vancouver, B.C., says that, despite great strides, pulp and paper mills are still "gross polluters." One old sulfite mill may discharge as much organic matter as a city with two million inhabitants, Sikes says, and the odor of an inefficient sulphite mill is detectable 50 km. away.

While the majority of mill pollution is discharged into water, Sikes reports that the mills also contribute to air, noise and solid waste problems. He predicts that as landfill sites become scarcer, solid waste in the form of bark, fiber, lime sludge, ash and sludge from waste water treatment plants will represent a growing problem to mill operators.

**Complicating Factors**—The Sikes report says factors complicating efforts to stop pollution from pulp and paper mills include the following:

Conditions vary widely between countries.

National environmental policies are dissimilar in philosophical approach and method of implementation.

No international agreement on monitoring techniques exists.

Few countries have developed a means of collecting pollution control data on a national basis.

No method of international dissemination exists for pollution control information once it is collected.

The pulp and paper industry is highly competitive and its profitability is historically cyclical.

The Sikes report quotes a 1973 Organization for Economic Cooperation and Development report estimating that between 1970 and 1980 pulp mills in OECD countries will need about 40 per cent more funds to finance pollution control investments, over and above those needed to increase production capacity. The corresponding figure for newsprint was 20 per cent and for paper and board, 10 per cent.

Measures adopted by governments to help industry meet environmental control expenses during the transition phase include: Direct subsidies or grants; tax relief, mostly in the form of accelerated write-offs; and loans from public funds, usually with a preferential interest rate.

**Sources of Pollution**—The magnitude of the pollution problem is greatest in the chemical pulp industry, and usually comes from older sulphite mills and from mills processing agricultural residues that require substantial purging of impurities from the raw materials.

Although paper mills discharge smaller quantities of

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effluents, they may present equally serious problems because they frequently are located away from large watercourses, Sikes says.

**Present Status**—It is now possible to build modern pulp or paper mills that use one-fifth to one-tenth as much water as older mills with a concurrent reduction of associated pollutants, the report says.

New mills in industrialized nations are required to achieve rigorous effluent and emission criteria,

**Charles Dennison, Senior advisor to UNEP's Industry Program, said that the seminar on pulp and paper will serve as a pilot for future UNEP seminars for aluminum, motor vehicles, petroleum and other industries.**

usually through the use of proven modern technology. Modern regulatory criteria are such that not only must appropriate treatment systems be installed, but the basic process must maximize water re-use and recovery of chemicals and fiber.

While perhaps not as advanced as in industrialized nations, the approach in developing nations is similar,

but officials may decide it is better to forego technical innovations which entail some risk, and stick to older methods for reliability and dependability.

With few exceptions, old mills in all countries have recently undertaken programs to economize on water use and to reduce obvious loss of fiber and chemicals. These are generally undertaken by mill personnel and usually represent an economic benefit.

Some more advanced mills are using additional expertise and implementing proven advanced technology.

The most advanced companies are testing and researching as yet unproven methods of pollution controls.

The report identifies sulphur dioxide as the most serious air pollutant and says that a sulphur compound is present in practically all chemical pulp manufacturing.

*(Continued on page 8)*

## Pakistan Spends Millions For Clean Water

**ISLAMABAD, Pakistan**—Three major water supply projects have been announced by the Pakistan government to provide clean drinking water to several million people.

The biggest of these projects is a 25-million-gal/day (MGD) pumping and filtration plant to be built in Karachi, Pakistan's biggest city (four million population) and major port. The project will be built by the Karachi Development Authority and will be financed through French, Japanese and British credits. The Pakistan government has provided \$1 million to get the project underway, and completion is scheduled for the end of 1975.

Karachi's water supply today has a capacity of 144.5 MGD, but the demand is 195 MGD.

The second project is the Lahore Improvement Trust water supply expansion plan for Lahore, the country's second largest city. The Trust (address: 4-A, Gulberg-V, Lahore) has invited tenders for \$2 million worth of pipe, closing date April 15. Completion time for the project is 12 months.

The third water project, which is being assisted by the UN Development Program (UNDP), is rehabilitation of water supply facilities in areas affected by the severe floods of 1973.

UNDP is providing \$1 million to support the government's program to install about 50,000 hand pumps in the rural areas of Punjab and Sind Provinces, which is the initial phase of a program to provide an adequate and safe supply of drinking water to rural areas, and to prevent contamination of open wells by future floods. Installation will be assisted by the UN's Children's

Fund (UNICEF) and the World Health Organization (WHO).

The provincial governments will implement this program through the People's Works Program in Punjab, and the People's Rural Development Department in Sind.

**ISLAMABAD, Pakistan**—The governments of Iran and Pakistan have agreed on Iranian investment in \$12-million worth of Pakistani water development projects.

At last month's meeting of the Joint Iran-Pakistan Ministerial Commission for Economic Cooperation held in Teheran, Pakistani officials said Iran agreed to provide financial assistance for the following projects:

Anti-salinity and control of water-logging in Rohri, Sind, including installation of 962 tubewells.

Flood irrigation in Baluchistan Province.

Rakshan River basin development in Baluchistan Province involving installation of 60 tubewells.

Bela Plain ground water development in Baluchistan involving installation of 120 tubewells for irrigation of 12,000 acres.

Iranian support is subject to feasibility reports on each project, Pakistani sources said.

Also, the World Bank is expected to provide assistance in the reclamation of water-logged areas in Peshawar and Mardan districts.

Area crop losses are estimated to exceed \$2 million annually. Preliminary surveys show more than 300,000 acres badly affected by water-logging and salinity.

The project is being overseen by the state-owned West Pakistan Water and Power Development Authority (Address: WAPDA House, The Mall, Lahore, Pakistan), which will need imported heavy machinery when the project starts.

MOHAMMAD AFTAB



## EEC Roundup: PCB Controls, Policy on Subsidies, Mercury in Food

**BRUSSELS**—The Executive Commission of the European Common Market (EEC) has introduced legislation to prohibit discharge of polychlorinated biphenyls (PCBs), and has sent guidelines to the nine member states on the financial subsidies they may grant to firms to cover the costs of environmental controls.

However, the EEC's Scientific Committee for Food has failed to agree on a uniform standard for mercury in food.

### PCBs

The PCB legislation would prohibit discharge or dumping of these substances, which are used as coolants, dielectric fluids, hydraulic fluids and plasticizers. The legislation is necessary, according to the Commission, because PCBs present a particular environmental hazard and no EEC member country has legislation regulating them.

PCBs are valued because of their excellent insulating properties, their non-flammability and their stability. However, because of their stability, they are non-biodegradable and tend to accumulate in living organisms. They are therefore considered insidious, particularly with respect to chronic toxicity.

According to the Commission, EEC consumption of PCB compounds is about 15,000 tons per year. Since PCBs were first intro-

duced in the 1930's, the Commission notes, about one-half million tons have been produced worldwide and the production is now declining.

The proposed legislation would prevent the unregulated disposal of PCBs and would require the member states to control the collection, regeneration and/or destruction of the compounds.

Every three years, the members would be required to submit a report on the state of PCB control in their jurisdiction. Implementation of the controls would begin 24 months after passage of the legislation.

### Environmental Subsidies

The guidelines on subsidies explain that, while EEC countries are bound to the "polluter pays" principle (*WER*, Feb. 3, p. 6), allowances can be made for firms or industries facing unusual burdens in meeting environmental standards.

But, in granting aid, the members must carefully avoid action that would in any way distort trade or competition by giving unfair advantage to the beneficiary.

Only existing firms facing "serious sectoral or regional problems" would qualify for aid. But during a transition period from 1975 to 1980 the Commission will "take a favorable view" of national aid to help firms meet strict new legislation even if the aid is not justified under

normal industrial or regional development programs.

This assistance must not exceed 45 per cent of the net investment required in pollution control in 1975 and 1976, 30 per cent in 1977 and 1978 and 15 per cent in 1979 and 1980.

In one of the first applications of the new guidelines, the Commission approved Belgian subsidies for wastewater treatment plants for a limited time.

### Mercury in Food

The Scientific Committee for Food had been asked by the Commission to advise on the feasibility of a food mercury standard.

The Committee confirmed that the major likely dietary sources of mercury are fish and shellfish in the form of methyl mercury, but pointed out that mercury in other forms can be found in other foodstuffs.

While mercury intake should be kept at a minimum, the Committee's report states it could not recommend a limit applicable to the entire Community based on toxicological considerations because detailed knowledge of dietary patterns in the different regions and countries is not available.

The Committee recommends that member states continue a careful watch in areas where fish is a major food source and that maximum tolerable mercury intake be kept below levels set by the Food and Agriculture Organization and the World Health Organization.

DAVID FOUQUET

## France Blocks New Chemical Plant

**STRASBOURG**—The French government late last month blocked construction near here of a West German chemical plant. In a case that has aroused widespread interest throughout Europe for several months, the West German firm—Chemische Werke Munchen (CWM)—has been denied permission to build a lead stearate plant at several other sites in both France and West Germany.

Strasbourg's mayor, former French Prime Minister Pierre Pflimlin, disclosed a letter from French Public Works Minister Robert Galley announcing that the

national government will not allow sale of land to CWM to build a plant at nearby Marckolsheim.

The pending sale had generated protests among residents of the area and environmentalists because of fears of lead pollution.

Strasbourg and regional authorities originally favored the plant while authorities and residents in Marckolsheim were opposed. In a local election a slate running against the construction overwhelmingly defeated one in favor.

CWM was first turned down by municipal authorities in Munich, then by the German cities of Worms and Kaiserslautern. The firm then sought to build its plant in France, first at St. Avold in Lorraine and then at Marckolsheim.





## Special Report: United Nations Environment Fund

**NEW YORK**—The United Nations Environment Fund has committed nearly \$15 million to more than 200 projects since it began operation early in 1973. The Fund's director, Paul Berthoud, who is also Assistant Executive Director of the United Nations Environment Programme (UNEP), believes he will soon be able to show enough results to justify the confidence of the governments that have pledged support to the Fund.

In an interview here early this month, Berthoud told *World Environment Report* that, based on current pledges, he expects to have resources of nearly \$102 million to draw from over the five-year period 1973-77. Pledges for 1974 alone were nearly \$21 million, and nearly \$13 million of this was actually in hand by the end of the year. In 1973, the pledges were \$12 million, of which all but \$600,000 has been received.

**Role of the Fund**—To understand the role of the Environment Fund, Berthoud believes, requires first an understanding of the role of UNEP itself. UNEP should not, he stresses, be regarded as "the UN agency with responsibility for the environment." Rather, it is designed to serve as the link—the "complexifier"—among all the other UN agencies whose actions touch on the environment.

That is, UNEP works to make sure the added dimension of environment is considered by such agencies as

the Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the International Atomic Energy Agency (IAEA).

Berthoud therefore sees the role of the Environment Fund as a catalytic one to inject the environmental element into projects the other agencies already have underway.

This approach gives rise to one of the major criticisms levelled at the Fund by some of the participating governments—that its projects are too broad and scattered to have a measurable effect on world environmental problems. These critics would rather see the Fund concentrate on a few obvious areas where it could have significant impact.

But Berthoud points out that UNEP, like any UN agency, must operate with the "global strategy" of the world body in mind. Each of the sectoral interests within the UN must be satisfied its own priorities are represented in a program before it will back the whole.

**Breakdown of Projects.**—In practice, about 58 per cent of the Fund's projects are carried out in cooperation with other UN agencies. Of the rest, 15 per cent are carried on with supporting organizations outside the UN, such as the International Union for the Conservation of Nature, (IUCN), the Sierra Club and the Arab League for Education, Science and Culture. *(Continued)*

### How the Money Is Spent . . .

Here are several examples selected from the more than 200 projects already approved under the United Nations Environment Fund:

#### Human Settlements and Health

"Habitat"—the UN Conference on Human Settlements to be held in Vancouver, B.C. in early 1976. An internal UNEP project funded at \$230,000 for 1974 and \$1,270,000 for 1975.

Studies on the long-term management of high-level and alpha-bearing nuclear wastes. A \$485,700 IAEA\* project to which the Fund is contributing \$119,800.

International Register of Potentially Toxic Chemicals. An internal UNEP project funded at \$93,500 through the end of this month.

Monitoring of residues from agricultural pesticides in developing countries. A \$68,164 FAO\* project to which the Fund is contributing \$46,500 over nine months ending this July.

#### Environment and Development

Impact on employment and incomes in developing countries of measures taken in industrialized countries to protect the

environment. A \$125,000 ILO\* study to which the Fund is contributing \$80,000 over 15 months ending this November.

Environmental problems of specific industries. The Fund has already committed \$45,000 to studies of the leather and iron and steel industries. Another \$300,000 is designated for 1975 to support a major industry program and to convene a series of workshops on industrial sectors such as pulp and paper, petroleum, aluminum and chemicals.

#### Conservation, Management and Control

Global action program for conservation of soil resources. A five-year program is planned in conjunction with UNESCO, WMO and SCOPE\*.

#### Oceans

Scientific basis for waste disposal into the sea, evaluation of the effects of oil, and water quality standards. A \$79,600 joint project with FAO to which the Fund is contributing \$57,200 over a two-year period ending in May, 1976.

Protection of the Mediterranean. This is the highest priority in the Fund's ocean program. UNEP has already supported a series of meetings and expert workshops that culminated in the Barcelona Conference early this year. In 1975, the Fund will commit \$1.7 million to the area, mostly for marine pollution studies in support of the action program developed at

*(Continued next page)*



The remaining 27 per cent are direct contracts with firms, consultants or individuals. These contracts are in areas where specific technical expertise is required, such as the Global Environment Monitoring Systems (GEMS) and the International Referral System for Sources of Environmental Information (IRS), and where there is no obvious natural partner.

Berthoud prefers to keep away from programs at the level of specific countries. But the Fund will back a national project if it has a feedback effect applicable elsewhere, or if it is a part of an international network, as, for example, a monitoring station.

**Selecting Projects**—Ideally, Berthoud would like a system for selecting Fund projects in which his staff would work out areas where environmental considerations should influence that agency's work. The other agency would then draw up project proposals and the UNEP technical staff would select the four or five most appropriate.

In practice, Berthoud admits, it hasn't worked out that way. The Fund was one of the first UNEP activities to get underway, and projects were being undertaken even before the first Governing Council meeting in 1973. There was much pressure for the fund to show results even before UNEP's professional staff was assembled to the point where it could give systematic analysis.

Today, however, Berthoud says UNEP is at the stage where informed technical judgement can be injected into project selection.

**The Spending Gap**—Some governments have criticized the Fund for not spending up to the level of its pledged income. The government of Canada is delaying its 1974 pledge of \$1.5 million because of this gap.

Dr. Peter Bird, Director of International Programs for Environment Canada, told *World Environment Report* that, while Canada fully intends to honor its pledge over the five-year period for which it was given, his government "must have evidence the money it contributes is being used in the way it was intended in terms of the purpose for which the Fund was established."

The other countries which account for the \$8 million difference between pledges and actual receipts for 1974 are the United States (\$5 million), the United Kingdom (\$700,000) and Italy (\$400,000). Italy, in fact, has yet to fulfill its 1973 pledge of \$400,000.

The U.S. Congress has not passed the Fund's appropriation for Fiscal 1975 (which began last July 1) which is part of the total foreign aid bill. However, Dr. Donald King, the State Department's environment advisor, told *World Environment Report* he is hopeful the U.S. will honor in full its pledge to provide 40 per cent of the fund's income over the five-year period. President Ford requested \$7.5 million for the Environment Fund in his proposed Fiscal 1976 budget.

**Future Hopes**—Berthoud says he is optimistic for the Fund's future and confident it will produce results. However, he cautions that defining results will be a difficult job within the context of UNEP's role—the role of influencing others to do the right thing by the environment.

the Barcelona Conference (*WER*, Feb. 3, p. 4, Feb. 17, p. 1), with the rest allocated for preparation of legal conventions.

#### Energy

A review of the environmental consequences of alternative patterns of energy generation and use. The Fund has committed \$253,000 to an internal review and a meeting of experts on this subject.

#### Environmental Assessment

**Earthwatch**—the Global Environment Monitoring System (GEMS). A major program involving monitoring systems, methodology studies and design development which has already supported several expert meetings and research and development projects. During 1975 the Fund will commit \$1.5 million toward developing a global plan for investigating pollution in the marine environment, for developing a network of monitoring stations in the Mediterranean and background air pollution monitoring stations.

**Earthwatch**—International Referral System for Sources of Environmental Information (IRS). Another major program in which the Fund invested \$1.4 million during 1973-74 and which is slated to receive \$1.2 million during 1975. Much work has already gone into developing standardized vocabulary, national focal points and operating guidelines. The system is now gathering and coding input data (*WER*, Feb. 17, p. 3).

#### Education, Information, Training, Assistance

**Information.** During 1973-74, the Fund allocated \$353,000 part of which was used to support production of a series of films, the Center for International Environment Information in New York, the International Institute for Environment and Development in London. Another \$750,000 is allocated for 1975.

**Environmental training** of engineers in institutions in developing countries. A \$186,000 UNESCO\* project to which the Fund will provide \$140,000 through February, 1976.

#### Future Development

**Outer limits.** During 1974, the Fund committed \$20,000 to a UNEP study of how to meet minimum human needs without transgressing the outer limits of the biophysical parameters on which life depends. The Fund also committed \$70,000 to support a conference on climate modeling, and \$5,000 to support a meeting on weather modification. Follow-up action in these areas will receive \$500,000 during 1975.

\*IAEA = International Atomic Energy Agency; FAO = Food and Agriculture Organization; ILO = International Labor Organization; UNESCO = United Nations Educational, Scientific and Cultural Organization; WMO = World Meteorological Organization; SCOPE = Scientific Committee on Problems of the Environment.



## Palm Oil Production Pollutes Malaysia's Waters

**KUALA LUMPUR, Malaysia**—Palm oil mills are pouring out pollutants almost equal in quantity to the human waste products of Malaysia's entire population, and the discharge is expected to double in another three years.

Under an agricultural diversification program begun 15 years ago, production has grown to the point where palm oil is this country's fourth largest export and is expected to become second only to rubber during the 1980's.

But, according to Abdul Aziz bin Ahmad, Director General of Malaysia's Factory and Machinery Department, the increasing palm oil production threatens to render a large proportion of the country's "good raw water" useless and is also creating ecological imbalance to "such a degree that it will have a detrimental impact on our national economy."

Palm oil production doubled from 424,000 tons in 1970 to 850,000 tons in 1973. By July of 1974 there were 79 palm oil mills and there are expected to be 110 by 1978. Only about half of these mills treat effluent in any way before discharge into the streams.

A survey by the Factory and Machinery Department shows that for every ton of FFB (fresh palm fruit from which 20 per cent by weight of oil is obtained) processed, one ton of water is required. Half the water is discharged as sterilizer condensate and the rest as clarifier sludge.

Even where mills have treatment facilities, according to Abdul Aziz, they are ineffective. Hence virtually the total effluent is discharged; the total effluent for 1974 was 4.7 million tons and the estimate for 1978 is 9.5 million tons. This equals a population equivalent of eight million and 16 million, respectively. The total population of West Malaysia is slightly less than eight million.

The chemistry of palm oil effluent is not fully known, according to Abdul Aziz. The Malaysian Agricultural Research and Development Institute is performing research on the subject, and the Factory and Machinery Department is working on the design for an effective treatment plant.

M.G.G. PILLAI

## Reforestation in Haiti — Too Little Too Late

**PORT-AU-PRINCE**—In a belated effort to replace Haiti's nearly exhausted forest reserves, Haitian President Jean-Claude Duvalier has started a communal replanting program.

Two centuries of neglect, primitive "slash and burn" agriculture, almost 100 per cent dependence on charcoal fires for cooking and the thriving mahogany wood-carving industry have almost wiped out Haiti's forest

reserves, once among the most lush in the Caribbean.

Lack of tree cover on the island's steeply sloped mountains is causing severe water runoff damage near this capital city. Erosion is slowing road construction; soil is being depleted; and subsurface water reserves are very low.

Under the direction of experts from Haiti's Department of Agriculture, volunteer crews plant small communal forests with seedlings of indigenous varieties and adaptable exotic fruit and nut trees.

The program, however, represents a feeble start, because 1,000 trees are cut daily for every seedling planted.

One tree that has escaped the slaughter is the "Maupau" tree, treasured by voodoo practitioners who believe departed spirits inhabit its branches.

## German Industry Compiles Its Waste Treatment Data

**BONN, West Germany**—German industries must now provide the government with data on how they handle environmental problems under a new Law on Environmental Statistics, which went into effect January 1.

The law calls for the gathering and cataloging of pertinent data on the collection, treatment and disposal of wastes and water by industry.

To facilitate enforcement of the new law, a questionnaire will be mailed periodically to all manufacturing concerns in West Germany with 20 or more employees. The questionnaire was prepared by representatives from the Federal Industrial Association, trade associations and chambers of commerce.

The questionnaire asks about methods and costs of waste collection, the weight and composition of wastes and methods of disposal. Firms using 10,000 cubic meters or more of water annually must report the source of the water, how it is used and how it is treated for disposal.

The firms are also asked to report on measures they have taken or plan to take to control air and water pollution, lower noise levels and improve waste disposal methods, and on the costs involved.

The objective of the new law is to establish a central data clearing house freely available to companies and individuals.

## Expert Panel Faults UNEP Energy Report

**NEW YORK**—An energy report prepared by Dr. Ishrat H. Usmani, a Pakistani atomic physicist and advisor to the United Nations Environment Programme, will not be submitted for discussion to UNEP's Governing Council next month as planned.

(Continued p. 8)



## Briefs...

### Threat to the Amazon Jungle

The Brazilian Congress of Botanists has warned that the Amazon jungle could become arid and devastated unless immediate action is taken.

The Congress—at its meeting in Rio de Janeiro in January—pointed out that the organic cover essential to life in the jungle may be lost unless plans for settlement and economic exploitation of the region are reformulated.

In related resolutions, the Congress warned that 200,000 sq. km. of forest are being cut or otherwise destroyed every year. Eucalyptus trees, which are not native to Brazil but which account for half the trees now replanted, are not adapting in various parts of the country. Therefore, according to the resolution, there is need for better research into reforestation and the greater use of native species.

### Capitalism Blamed For Pollution

The industrialized countries—especially the United States—are responsible for creating the world's environmental problems, says *El Moudjahid*, the official Algiers newspaper.

Although the campaign against world pollution began in the United States, according to an editorial, Americans devastated 12 per cent of South Vietnam's territory with harmful chemicals.

*El Moudjahid* declares that environmental problems cannot be disassociated from such concerns as military domination over science and technology, unjust distribution of wealth and the plunder of developing countries by world capitalism. Therefore, the editorial continues, the environmental crisis must be

linked with other aspects of the crisis that is shaking the foundations of the capitalist world. Pollution can only be solved in the context of profound socio-economic and political changes.

While this is the official and public Algerian position, in practice Algeria makes extensive use of Western techniques and technicians to tackle its own environmental problems.

### Caspian Cooperation

Iran and the Soviet Union have mapped a joint program to control pollution in the Caspian Sea.

At a meeting in Moscow in February, representatives of both countries agreed on future cooperative ventures. The Soviet government will assign one oceanographic research ship to a team of experts made up of eight Russians and four Iranians. The Iranians agreed to provide the team with a camera-equipped aircraft to trace sources of water pollution in the Caspian. The exchange program is expected to begin toward the end of this year, according to reports in the Iranian press.

### Small-Scale Smoke Scrubber

A small-scale scrubber, invented and manufactured in Brazil, has gone on the market in Rio De Janeiro and Sao Paulo for use in cleaning emissions from bakeries, restaurants and apartment house incinerators. The device is said to be up to 98 per cent efficient in removing contaminants.

The scrubber works by cooling the smoke, injecting it into a column of water, then spraying the mixture with another column of water. The

water is recycled for up to a month. The pumps and turbines are stainless steel and the rest of the device is plastic.

Two models are in production—one with a capacity of about 120 cubic feet per minute (cfm) and the other of about 2,000 cfm. A larger, industrial model is being developed.

The scrubber was invented by Giuseppe Capulli and is patented in Brazil, the United States and several other countries. It is manufactured by Capulli's company—Lacrom—in a plant in the Rio suburb of Jacare.

### Mediterranean Losing Its Monk Seals

Monk seals are disappearing from the Mediterranean at an alarming rate. They are no longer seen along the northern coast and have not been reported off Corsica, their last European stronghold, since 1970.

A census by the Algerian government in cooperation with the International Union for the Conservation of Nature found monk seals at only three locations along that country's coast during 1974, compared with 19 locations in 1970.

The Algerian press blames industrial pollution of the Mediterranean and overfishing for the seals' disappearance. Algerian authorities are considering establishing wildlife sanctuaries at Colombi Island and at an unspoiled area near Tenes.

### Airport Noise

The downtown airport in Sao Paulo, Brazil, has been closed to night traffic after years of complaints against noise pollution by residents of the area. The Congonhas airport will now be closed from 10 pm to 6 am. Air traffic will either be rescheduled or rerouted to Viracopos, the out-of-town airport.



## Pulp and Paper (Continued)

The Sikes report underscores the difficulties confronting the UNEP seminar.

**Seminar Goals**—Charles Dennison, UNEP's Senior Industry Advisor in New York, told *World Environment Report* that he hopes the Pulp and Paper Seminar will stimulate development of global standards for the industry.

UNEP has hired three consultants for the seminar, and experts from several countries, including the US, Canada and France will attend. Several UN agencies as well as non-governmental organizations and representatives from major pulp and paper producing nations are expected to be present, Dennison said.

**Procedures**—The agreed upon findings worked out at the seminar will be presented to UNEP's Governing Council as recommendations, and then if approved, will be recommended as guidelines to governments, Dennison said.

Industry representatives at the seminar, he added, will be expected to circulate the seminar's findings within the industry.

Dennison said that the seminar on pulp and paper will serve as a pilot for future UNEP seminars for aluminum, motor vehicles, petroleum and other industries.

UNEP has allocated \$300,000 to finance the industry program from 1975 through 1977. UNEP's Office of Industry is based in Paris and headed by Baron Leon De Rosen, an industrialist and former Simca official.

## Energy Report (Continued)

An expert panel, drawn from 14 countries and 11 UN agencies, met in New York recently, and after three days decided the report needed more work (*WER* March 3, p. 1).

Several panel members told *World Environment Report* that the Usmani document was "superficial."

Specifically, they thought the role of fossil fuels was not given enough study, nor were alternate energy sources like solar, wind and thermal energy. On the other hand, the experts believed the report took an overly negative view of nuclear energy and International Atomic Energy Agency controls.

The report also failed to touch upon the human health aspects of pollution and the economics of pollution and its control mechanisms, panelists concluded.

The experts, to whom the report was submitted prior to submission as a policy paper to UNEP's Governing Council, proposed that after more study the document could be resubmitted to an enlarged panel, then possibly published as a technical document.

The additional study necessary to alter the report is expected to take one year.

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**Correction**—The March 3 issue of *World Environment Report* reported incorrectly the description by Exxon's Dr. Donald Kahn of the "load on top" method of handling oil tanker ballast. The sentence should have read: Only the settled water is expelled into the sea.

## Calendar of Meetings, Seminars and Events

**May**—Second Council of Europe meeting to exchange information on national regulations and practices regarding air pollution, Strasbourg, sponsored by UNEP.

**May 7-10**—Conference on Population Growth and Rural Development, Kampala, Uganda, sponsored by Eastern Africa Agricultural Economic Society.

**May 13-16**—Third International Ocean Development Conference, Tokyo.

**June 2-6**—International Symposium on the Combined Effects of Radioactive, Non-Radioactive and Thermal Releases to the Environment, Stockholm.

**June 5-8**—Earthcare, conference on the preservation of natural areas and urban open spaces, New York, sponsored by Sierra Club and National Audubon Society.

**June 30-4 July**—International Symposium on Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environment, Otaniemi, Finland.

**August 11-15**—Scientific Committee on Problems of the Environment, Third General Assembly, Vancouver, B.C.

**August 18-20**—Specialized conference on nitrogen as a water pollutant, Copenhagen, sponsored by the International Association on Water Pollution Research.

**August 18-23**—Symposium on Long-Term Climatic Fluctuations, United Kingdom, sponsored by World Health Organization and International Association of Meteorology and Atmospheric Physics.

For further information contact the Center for International Environment Information.

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## LAW OF SEA: Environmental Issues Unresolved At UN Conference

*UNITED NATIONS, New York*—When the United Nations Law of the Sea Conference was originally initiated by some 150 nations nearly three years ago, the major concerns appeared to be rooted in environmental issues—the protection of the territorial and international waters in terms of fishing, oil and mineral exploration, and dumping of contaminated waste. Now, however, in its fifth session which resumed here on August 2 and which ends on September 17 (*WER*, Aug. 16, p. 1), the negotiating meetings are bogged down in economic and political squabbles over who shall control and share in the mineral wealth to be mined from the deep seabeds.

Although the environmental issues have not been totally obscured by the non-scientific ones, neither has the hoped for progress in the environmental sectors emerged. To find out why, *World Environment Report (WER)* interviewed John Busterud, a member of the U.S. delegation to the Conference, and also one of three members of the President's Council on Environmental Quality.

**WER**—What precisely are the key environmental issues?

**BUSTERUD**—One of the committees (Number Three) is entirely devoted to environmental questions, but we see such issues in each of the other two main committees also. In Committee One, for example, you have the problem of how to control pollution in connection with deep sea mining operations, both at and off the mine site.

**WER**—How can one pollute by simply plucking up the minerals from the seabed?

**BUSTERUD**—There are various types of technology for this process, perhaps the leading one being a vacuuming technique that sucks up the nodules. In this process, however, other material will inevitably be sucked up also, thus disturbing the seabed and creating the problem of waste disposal either on site or elsewhere. This creates the possibility of materials that are not valuable being put back into the water column.

There is also this to consider. There has been a real focus on manganese nodules which are walnut-sized. The actual physical problem of picking those up won't be so bad unless at some later stage efforts are made to refine the surrounding mineral-rich sediments on the ocean bottom. Such endeavors could leave plumes extending a

thousand kilometers in length, and these would take a very long time to dissipate.

**WER**—So it is fair to say there really is concern about the technology itself?

**BUSTERUD**—Yes, indeed. What you are doing by creating such a plume is denying sunlight in the lower reaches of the oceans, in the areas where phyto plankton and other green growth breeds and grows. So we want to be very careful about any adverse environmental effects on the living resources of the sea.

There is also the problem of oil mining, some of which might be beyond the 200-mile economic zone, as well as closer to shore in the 3- or 12-mile territorial zone, depending on how the treaty comes out. I would also point out that the present treaty draft talks about the mine site area, but it does not attempt to spell out international regulations for any activities away from that area. Perhaps the treaty needs to contain—and this would be the province probably of Committee Three—some kind of a state's obligation to regulate mining practices away from the mine site.

There is also a great danger of a "flag of convenience" developing here, where one of the national, or even private, companies might opt for a flag of convenience and transport the mining materials to some other country where the regulations are not onerous—there to process the materials and dump them back in the ocean.

**WER**—Surely the issues of fish catches and whale quotas are being solved?

**BUSTERUD**—Well, many of the fishing regulations are weak in a sense because there is no specific obligation for

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a particular country to follow conservation principles. Nor is there any strong dispute settlement provision. Already there are some hazy overtones in Committee Two about provisions on marine mammals, and we want to be certain that there is no implication in the convention that it would be possible to undercut the work of the Whaling Commission.

Committee Three still has lots of problems, principally the extent to which coastal states can regulate pollution in their own territorial waters. Moreover, there has been a tremendous effort by the coastal states to secure rights outside the 200-mile economic zone. But it is turning out that they are willing to significantly reduce the quality of these rights—the environmental impact—in order to establish the principle of these rights. We have strongly supported our own domestic legislation, which requires standards for such things as construction and manning equipment design for vessels and for discharge in the territorial sea.

**WER**—What about the problem, previously referred to, of ocean dumping and enforcement?

**BUSTERUD**—That is bothersome and gets back to the extent to which this convention provides for flag state preemption, for again putting all the power to enforce regulations ultimately in the state where the vessel is registered, rather than in the state where the violation occurred. That has been a very controversial issue. The U.S. has been in support of efforts to strengthen the obligations to get at people who are misusing the flag of convenience. But we are somewhat alone in that effort because all the other maritime states have been in opposition.

Also important is the securing of meaningful dispute settlement provisions in the treaty. It obviously does little good, for example, to have conservation principles set forth for fish if there is no way to go to dispute settlement when a country fails to honor them. In that case, hortatory language is of little value.

Finally, there is the feeling that the Conference is turning into a confrontation situation not only on the economic and political issues, but also on some of the environmental issues I have outlined. That is too bad because the developing countries in many ways need a good Law of the Sea treaty even more than do the developed countries.

A. W.

## Great Britain Looks for New Sites To Produce Geothermal Energy

**LONDON**—The prospects for development of geothermal energy in Great Britain justify more detailed research into the geology of promising locations, and into the methods of extraction and marketing, a preliminary assessment published last month suggests.

The Report, "Geothermal Energy: the Case for Research in the UK," is the ninth in a series of energy papers prepared for the Department of Energy by its Energy Technology Support Unit (ETSU) at Harwell.

Geothermal sites in Britain would be "semi-thermal," i.e. with a temperature gradient at the surface of the earth of between 40-80° C/km, capable of providing lowgrade heat of up to 200° C at the well-head. With the increasing cost of fossil fuels this becomes economically attractive.

The two major types of potential geothermal areas in the UK are "hot rock" fields and warm springs or aquifers. The spine of the county of Cornwall in the south west of England, and an area in Durham in the north of England are two promising sites for "hot rock" fields. The report estimates that heat at a rate of up to 300,000 tons of coal equivalent could be extracted annually for 20 years from beneath each square kilometre of rock in such fields. The calculated cost of this at the well-head would be approximately \$.10 per therm, at least half the price of heat from imported oil. Well-head prices, the report points out, do not include transmission and distribution costs, which also need considerable research. Generation of electricity from hot rock heat is considered unlikely except in the most favorable areas.

The report estimates that thermal waters from an aquifer, which might be used for district heating projects, could produce an annual equivalent of 50,000 tons of coal for 20 years at a cost calculation of \$.05 per therm at the well-site. Most promising areas for these are the Bath/Bristol area, the Hampshire basin in the south and west of England, and the Midland Valley of Scotland.

Following the publication of the report, Under-Secretary of State at the Department of Energy, Alex Eadie, announced in the House of Commons that a three-year research program, costing nearly \$1.5 million, would pursue the report's findings. **BARBARA MASSAM**

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## Debate Rages in Western Europe Over Fast-Breeder Reactors

**BRUSSELS**—Western European countries are in the midst of a major environmental and economic controversy over the construction of a new generation of fast-breeder nuclear reactors.

The debates have emerged as important national issues in both France and Great Britain in recent weeks as opponents have challenged government building plans. In addition, cost factors have also surfaced in the development of another joint project in The Federal Republic of Germany.

In Britain the controversy has been largely confined to public statements and extensive press coverage, but opponents of the country's showcase Super-Pheonix project near Lyon. After bloody clashes between police and demonstrators in early July, foes of the Super-Pheonix in recent weeks have taken up jobs and residence in the region, indicating that they will continue to press their case in a future offensive. French police have indicated that there is also an international movement involved in the current turmoil at the site at Creys-Malville. After the early July bloodshed there when tear gas was used to disperse protesters, officials noted "there were 13 policemen wounded so the anti-nuclear militants were not non-violent." Several municipalities have also demanded an immediate halt to plans.

The furor in these countries surrounds the creation of fast-breeder reactions which, unlike existing commercial nuclear power stations, are fueled not only by uranium but by plutonium—a lump of which the size of a grapefruit, one London newspaper noted, is enough to make a bomb "like the one which wiped out Nagasaki." The appeal of these stations is that they can "breed" more fuel than they consume. They also, however, produce plutonium. Another major incentive for the French government particularly is the prospect of exporting this future technology well in advance of possible competitors.

In Britain, the concern has been led partly by establishment figures such as Sir Brian Flowers, a top scientist who is chairman of the Royal Commission on Environmental Pollution (*WER*, July 19, p. 1). Early this month he observed that plans to build a commercial-scale fast breeder showed no doubt that it could be "built and operated, given adequate safeguards and adequate resources, so as to be environmentally acceptable as an object in itself; we therefore do not oppose it. Nevertheless, it is a billion-pound step down a technological path which may later prove unacceptable or even catastrophic." Others have pointed to major accidents in similar plants in the United States and the Soviet Union, and Britain's Secretary of State for Energy has invited comments on the project before deciding on it this autumn.

The controversy, however, is bitterest in France where the government is already committed to the development

of the Super-Pheonix as a showcase high-technology project that some European experts here are already calling "another Concorde," in reference to the controversial supersonic airliner. France has already developed a prototype reactor model that its experts say has not experienced the problems of the American and Soviet units. America's Fermi plant was closed down in 1972 near Detroit after a potentially disastrous accident.

Dissenters from nearby Switzerland, Italy and Germany reportedly joined French opponents of the Super-Pheonix in July in a protest camp-in near the site of the plant. Although the several hundred protesters were dispersed, a number are said to have remained in the area and taken jobs and residence there to continue to agitate among the local population.

Financing for the plant is also coming from Germany and Italy and it is expected to be in operation by 1982. Officials have discounted the threat feared by the protesters. Another plant planned by several countries for erection in Germany has experienced cost overruns and one participant, Holland, has decided to withdraw.

DAVID FOUQUET

## "Black Water" from Mexico City Threatens Health in Nearby Towns

**TULA, MEXICO**—Contaminated water from Mexico City, 43 miles south of this ancient town, is threatening to damage thousands of acres of farmland and the health of residents in three towns. Atmospheric contamination by cement factories in this area already is taking a toll on plant life and residents.

A study by Mexico's federal Secretariat of Water Resources warned that "black water" is endangering 115,000 acres of cultivated land and is "compromising" the health of 50,000 persons in three population centers, including Tula. Three large dams in this traditionally semi-arid zone are now depositories of human and industrial waste, the report said.

Most important, the means for securing sustenance by farm families is in dire trouble if the contaminated water reaches the cultivated farmland, the report said. It noted that earlier in this century, the area suffered epidemics of typhoid, and feared new epidemics could occur under present conditions.

The report noted that atmospheric contamination already is a major problem, with dust from cement factories falling "like snow," causing trees and plants to become dwarfed, leaving a hard shell on the earth, and aggravating respiratory ailments and tuberculosis among humans. One cement factory, the report noted, has already been closed by the national Health Department's sub-secretariat for environmental improvement.

Ten new storage dams in this state are to be constructed by the water resources secretariat, the first to begin this year. They should increase cultivated land by 37,000 acres and, officials and townspeople hope, alleviate the present water contamination.

KATHERINE HATCH



## UNEP Approves 12 Ambitious New Projects Despite Fund Cut-Backs

**NAIROBI**—The Kenya-based United Nations Environment Programme (UNEP) has recently approved an ambitious new program of global activities, despite funding cut-backs announced at the last meeting of its Governing Council held earlier this year.

Covering a 45-month period, ending in December, 1978, the twelve new projects will have been funded for \$6,797,819, but will only incur a total cost to UNEP of \$1,763,463—the balance being contributed either by the participating country or by other international agencies.

UNEP's latest list of approved projects covers a broad spectrum of activities ranging from a human settlement technology program in Latin America and a cyclone monitoring "early warning" system in Asia to a series of studies on environmental problems in the Caribbean subregion.

Because the projects encompass such a broad geographical spread, many of the programs are linked to other UN agencies such as the Food and Agriculture Organization/International Oceanographic Commission, which plan to accelerate the Aquatic and Fisheries Information System into an integrated world system for the collection and dissemination of information relating to the aquatic environment.

Already underway is a nearly \$2 million study on the effects of large emissions of waste heats and pollutants, and methodology development for comparing energy options. This project is related to the Governing Council's decision to tackle problems of human health and man-induced modifications of climate and weather, energy and development.

A 24-month study to improve the nitrogen contribution of tropical legumes and biological nitrogen fixation processes will cost nearly \$3 million. In this project UNEP will finance field trials by the International Institute of Tropical Agriculture (Ibadan, Nigeria) designed to prevent soil degradation in humid regions where increasing population densities have broken down the traditional system of crop rotation.

SPECIAL DISPATCH TO WER

## Broader Use of Solar Energy Urged for Third World Countries

**BELGRADE**—The Nuclear Research Institute "Boris Kidric" of Vinca in Yugoslavia, together with the Yugoslav Committee for Environment Protection, has suggested to the Yugoslav Government that it propose to the Summit Conference of Nonaligned Nations in Colombo, Sri Lanka, joint research on broader, direct use of solar energy in the Third World countries.

Other countries, especially those which do not have a year-round warm climate, have given considerable attention to the harnessing of solar energy. The U.S. Govern-

ment, for example, has budgeted for 1977 some \$300 million for such research. France and the Federal Republic of Germany have each earmarked \$5 million, and Great Britain \$1 million for the same purpose. And this despite the fact that hours of sunshine in these countries, except for the southern region of the U.S., are comparably rarer than in a majority of developing countries in Africa, Asia, and Central and South America.

The institute pointed out that the energy crisis, plus requirements for additional energy sources, have lately given incentive to a number of Yugoslav companies to develop production of "solar ovens." It was also pointed out that the climate was propitious: an annual average of 2,200 sunny hours in Belgrade and more than 2,500 sunny hours in Yugoslavia's coastal region.

The institute's Dr. Branko Lalolovic said that "The time has come when the solution of the problem of solar energy in Yugoslavia, as well as in Nonaligned countries, should be approached more comprehensively and in a better organized way."

BRANKA BOSKOVIC

## Overkill of Krill in Antarctic Deplored by Argentine Ecologists

**BUENOS AIRES**—Argentine ecologists are worried that lack of international controls on Antarctic krill fishing may endanger the region's ecological system. Uncontrolled fishing which can damage the fish, bird, seal, and whale populations feeding on the krill could throw the entire Antarctic marine ecology into chaos, according to Aldo Tomo and Enrique Marschoff, investigators for the Argentine Antarctic Institute.

The krill is a high-protein, crab-shaped shellfish about 2.5 inches long. Since 1971, several major fishing nations, mainly the USSR, The Federal Republic of Germany, and Japan, have been investigating the fishing possibilities of the krill populations. According to Dietrich Sahage, director of the German Antarctic study, up to 50 million metric tons of krill can be caught a year without endangering the species.

Annual krill reproduction is estimated at 130-220 million metric tons. Argentine worry stems from wide-scale fishing already started by the Russians and Japanese with methods allowing for capture of 10-12 metric tons per hour. The Russians use nets while the Japanese have developed suction pumps.

The highest krill concentrations are located in territorial waters claimed by Argentina. During peak months of January and April, concentrations in Argentine waters are estimated to be around 44 pounds per cubic meter.

"The rational exploitation of a resource requires not only the most refined knowledge possible of the object to be exploited, but also a conscientious study of the ecological system in which it is located. The goal is not to obtain the maximum possible yield of the species considered, but the maximum yield of the entire ecological



system in such a way that stability and future exploitations are not affected," said Tomo and Marschoff in their study.

Revived interest in krill stems from its high nutritional value. It is 13-18 per cent protein and contains Vitamins A and B. The Russians are experimenting with a protein paste made from krill and then mixed with cheeses to form a product called Koral. However, the high temperatures needed to process the paste burns off some of the nutritive value. To avoid this, the Germans are experimenting with crushing the krill to form a juice. Because of the krill's small size, it is impossible to extract commercial quantities of the meat.

A call for international krill fishing controls is expected to face legal and political obstacles. Several nations have conflicting claims to Antarctic territories and the offshore waters. Many nations want the sovereignty issues resolved before discussing cooperation on resource control. An example is the nearby Falkland Islands, controlled by the British, which have offshore krill populations. The Argentines also claim the islands, referring to them as the Malvinas.

Britain has offered cooperation in developing all offshore resources. Argentina, so far, has refused, saying the sovereignty question must be settled first.

Nations laying claim to Antarctic territory include U.S., USSR, Britain, Argentina, Brazil, and Chile.

AGOSTINO BONO

## Japanese Environmentalists Protest Scrapping of Pollution Programs

**TOKYO**—Japanese environmental organizations and consumer groups are beginning to unify their efforts to counter what they see as a concentrated roll-back campaign currently being waged to scrap pollution improvement programs in favor of economic recovery measures.

Officials of 81 campaign groups and 63 consumer bodies recently met here to protest reversal movements by both the government ministries and agencies and private corporations. The meeting was the first of its kind in which various environmentalist and consumer organizations from all over Japan sent delegations.

According to those attending the Tokyo conference, both government and business leaders are in collusion to restrain movements against pollution by providing top priority to continued economic development. As a result, the Japan Consumers' Union, for example, is pushing a new national campaign to protect public livelihood and the environment in the hope that the country's pursuit of a higher-growth economy will not stimulate pollution.

Representatives of the attending environmental and consumer groups have agreed that their organizations will work against heavy use of household plastics, work for much better use of Japan's own natural resources, and oppose enlarged nuclear power generation. They also

actively oppose the use of synthetic detergents, and are pressing local and metropolitan governments to impose severe controls on the discharge of sulphur oxides (SOx) by industrial plants.

Nineteen locations in the country have been designated by the Japanese Government as being badly in need of stiff restrictions on the discharge of SOx—one of the five major air pollutants which are known to cause photochemical smog. It is felt in Japanese environmental circles that limits should be placed on the amount of SOx discharged by the hour and by the day at all industrial plants which consume more than 300 liters of heavy oil daily.

Executives of Japan's Urban Pollution Study Council are convinced that many of the nation's power plants should be forced to install special devices to reduce their SOx levels in smoke emitted from their stacks, to use better quality fuel, or even to reduce operating hours to meet the new requirements. The council recommends use of heavy oil with a sulphur content of 0.45 per cent or less, rather than the present level of 0.75 per cent.

A. E. CULLISON

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## In Brief . . .

### USSR Blames Japan For Drop In Okhotsk Sea Herring Catch

Soviet fishing officials have revealed that Okhotsk Sea herring catches have dropped sharply to the 70,000 ton level, which is only 10 per cent of what they consider adequate. Consequently, they said, a warning has been issued at a meeting of Japanese and Soviet fishing experts held aboard the Russian oceanography vessel, Poseidon, in the Okhotsk Sea.

The Soviet authorities blamed overfishing of the herring that spawned this Spring for the steep reduction. Last April when Japanese and Soviet experts met in Moscow, Soviet authorities estimated that the Okhotsk Sea resources totaled some 350,000 tons. This in itself was a significant drop from the 590,000-ton level of 1975.

The Soviet authorities consider an "adequate" level to be between 700,000 and 800,000 tons.

At that same meeting in Moscow, Soviet officials had urged the Japanese to reduce the number of their fishing boats in the Okhotsk Sea. There is now speculation that the Soviets will next request the Japanese to halt all herring fishing in the Okhotsk Sea for the next season to permit the herring supply to return to "adequate" levels.

### W. Germany, NSF Support Deep Sea Drilling Project

The Research Association of the Federal Republic of Germany and the U.S. National Science Foundation (NSF) have signed a Memorandum of Understanding providing for German support and participation in the International Phase of Ocean Drilling of the Deep Sea Drilling Project (DSDP).

By signing the memorandum, West Germany agreed to contribute \$1 million annually for three years in

support of the DSDP. Additional funds are available for their scientists to conduct geological investigations of core sample obtained from the DSDP and to conduct marine geophysical investigations of core samples obtained from the DSDP and to conduct marine geophysical surveys in support of the International Phase of Ocean Drilling.

The memorandum was signed in Bonn by Dr. Robert E. Hughes, an assistant director of the NSF, and by Professor H. Maier-Leibnitz, president, and Dr. C.H. Schiel, secretary general, of the German Research Association.

### Heating by Low-Sulphur Oil May Save Acropolis Erosion

A low-sulphur oil fuel must be used for heating apartments in Athens surrounding the Acropolis in order to protect the 2,500-year old monuments from air pollution, it was decided by Minister of Culture and Sciences Constantine Trypanis. The minister also said that a further protective step to ban buses and tourist coaches from the area is being considered.

A special committee to study means of preventing further deterioration of the Acropolis, and a UNESCO report, have singled out atmospheric pollution as the greatest danger to the monuments.

Tests have shown that erosion in winter is much higher than in summer. Measurements made in the area indicated that the content of sulphur dioxide in the atmosphere reaches the dangerous level of 120 ugr per cubic meter in winter as against 50 in summer. The committee attributed the increase to the use of mazout (heavy fuel oil) for heating in apartment blocks around the hill, and demanded its banning.

Trypanis said the new type of diesel oil will contain only 0.5 per cent of sulphur instead of the 3.5 per cent it has today.

He added that particular care will be taken for the six Caryatids statues of the Erechtheion temple where

atmospheric pollution has decayed the marble to a depth of almost half a centimeter. The minister said the statues will remain on the hill this winter but under a plastic air-conditioned cover. Then the statues will be taken apart as soon as a new museum is ready for them, expected some time next year. Marble imitations will be erected in their place. "The measure is very unpopular but we have no other choice," Trypanis said.

The minister said that pollution density indicators will be placed on the base and top of the hill to show the results of the measures against pollution. "If any new danger arises," he concluded, "we are determined to take even more strict steps in order to save the Acropolis treasures."

### Noise Pollution From Bells Worn By Cows Ruled Legal

A court in this Black Forest vacation city of Freiburg, the Federal Republic of Germany, has ruled that those cow-bells that tourists take home may clang loud and long without violating anti-noise ordinances—if they are worn by a cow.

The court found that anti-noise regulations do not apply to the bells farmers put on their cows so they can track down strays. The court rejected a suit by vacationists who complained the bells disturbed their sleep. They had asked the court to ban cows from wearing bells between 9 P.M. and 7 A.M.

### Asia Scientists in UNEP Information Workshop

Scientists from Asian countries met in Sydney, Australia, in mid-August to discuss their role in UNEP's newly-established International Referral System for Sources of Environmental Information (IRS). The system links users and sources of environmental information in a global network that is part of UNEP's Earthwatch program of research,



evaluation, monitoring, and information exchange.

UNEP headquarters in Nairobi announced that scientists and technicians from Australia, Bangladesh, India, Japan, New Zealand, Pakistan, the Philippines, Sri Lanka, and Thailand, had attended the workshop.

They discussed the new approach to the IRS formulated by UNEP. Originally, UNEP planned to feed all environmental information into a data bank and constantly update it. Instead, UNEP has decided to compile a register of existing environmental information sources and make it available to users. An extensive index of such sources—government agencies, corporations, professional organizations, trade associations and non-governmental organizations—is expected to be published by the end of this year with detailed information on their capabilities and expertise.

### Japan Develops Screen-Print Method for Solar Batteries

The Wireless Research Laboratory of Matsushita Electric Industrial Company in Osaka, Japan, recently disclosed that it has successfully developed a screen-printing method for the mass production of solar batteries. Claimed to be the world's first low-cost method, it uses the same principle as the conventional mimeograph printing method, except that a metallic screen is substituted for the silk screen.

Reports from the laboratory also show that the new solar cell is essentially an electrically-conductive piece of flat glass covered by an indium oxide type of filming with two sintered layers of chemical compounds on top of the indium oxide covering. The first layer is cadmium sulfide and the second cadmium telluride. The two layers are made by screen printing. This screen-printing method is already widely used in the production of electronic equipment parts.

The laboratory further pointed out

that because of the absence of silicon, the screen-printing method results in a much lower production cost when compared with conventional methods. In addition, it is applicable to the commercial production of solar cells because the product, even in its trial form, has shown a relatively high rate (8.1 per cent) in converting light into electricity.

### Dutch Develop New Monitoring Device for Water Pollution

A Dutch firm claims it has developed an improved system for monitoring water pollution. The chief advantage of the new automatic sampling device for surface water is that the contact electrode is cleaned automatically after every cycle. Three sample bottles can be installed in the control unit and placed in the water up to 164 feet apart so that samples can be taken from three different locations at a time.

Marketed under the trade name, "Samplomatic", the new installation is produced by Bozan Instruments B.V. of Apeldoorn, the Netherlands. It is now available for export to the United States and other countries. A patent has been granted for the self-cleaning process. Construction of the machine prevents liquid samples from coming into contact with the moving parts.

Besides fully automated operation, the machine also offers manual performance. Maintenance is simple and can be carried out by an unskilled staff. The self-cleaning sample device is available in different models from 24 to 240 volts. The sample bottle comes in any material required.

### Rio de Janeiro Enacts First Garbage Dumping Legislation

Argentine sanitation officials are experimenting with methods of compressing garbage and then burying it as a means of reducing environmental contamination in the capital

city of Buenos Aires. The current main disposal method of incineration pollutes the air with soot and gasses harmful to breathing, according to officials.

Buenos Aires currently has one compressing system in operation. After garbage is compressed into cubes, the metal is extracted by magnets. The residue is then buried so that it can decompose. A major drawback, however, is that chemical decomposition sometimes produces spontaneous combustion, making sanitation officials leery of adopting this on a wider basis without further testing.

Household and industrial residue accounts for a daily average of 5,000 tons of garbage in Buenos Aires. Besides polluting the air, incineration contaminates the surrounding waters where soot is deposited by the rains and wind. About 85 percent of the water resources along the city's coastal area are contaminated by soot and industrial waste.

### Efficient New Hearth Created From Hollow Cement Block

The vast majority of Sri Lanka's rural women who cook their family meals on the traditional hearth—three stones and firewood—are being offered a simple hearth which cuts down the amount of firewood now used by two-thirds, cooks faster, and also reduces smoke to negligible amounts.

The new hearth which has been developed by a government agency, the Industrial Development Board (IDB), consists of a hollow block of cement with ventilation gaps. All that has to be done is to light the firewood in the hollow. A small-bore pipe leads out the very small quantity of smoke emitted.

The mud-lined cement block cuts out convection, conduction, and radiation, directing most of the heat generated on to the cooking utensil. That means quicker cooking and less firewood, an IDB scientist explained.

This "cooker" will go on the market here this month at \$1.50.



## Lynx Successfully Bred Again in Yugoslavia

The World Wildlife Fund (WWF) headquartered in Switzerland has reported that lynx re-introduced in Slovenia, Yugoslavia, have bred and settled down successfully.

Lynx formerly had roamed the Slovenian forests but had been wiped out. With WWF assistance six lynx were obtained from Czechoslovakia and released in Slovenia in early 1973. By the end of 1975 there were five locations with permanent lynx populations within an area of 600 square kilometers in the Kocevje forest and Inner Carniola, the WWF said.

## Mexico Will Publish First Catalog of Native Fish

A catalog of the principal species of fish in Mexican waters is being prepared by the Mexican National Fish Institute (El Instituto Nacional de Pesca) as a guide for better fish exploitation, protection, and breeding. The first such catalog compiled

in modern times, it contains drawings, photographs, and full descriptions of 504 species.

Titled "Catalog of Mexican Marine Fish," the book will be distributed to marine science study centers, marine teaching and investigation institutions, and to fishing communities and cooperatives throughout the nation. By enabling a correct identification of fish species, it will aid in determining the best zones for exploitation of particular fish, adequate setting of closed breeding seasons, and enumeration of the marine resources of Mexican waters.

Jose Campillo Sainz, secretary of Commerce and Industry, noted in an introduction to the catalog that it also will help encourage the consumption by Mexicans of fish and other sea products.

## Colombia Sharply Reduces Export of Alligator Skins

The Colombian wildlife service INDERENA intends to reduce the export of alligator skins to 200,000

this year compared to an average annual export of some two million skins. Instead of establishing laws to ban the trade, which INDERENA has neither the money or manpower to enforce, the agency will reduce the sale of skins by increasing red tape for export licenses.

## Yugoslavia To Emphasize Piped Gas Over Other Fuels

Two West European firms have contracted to pipe gas into Sarajevo, Yugoslavia. The gas will replace solid and liquid fuel which has seriously polluted the atmosphere.

Sofregas of France has announced it is planning a pipeline from Zvornik, northeast of Sarajevo, across the mountains to link up with the city gas network. The Dutch Gas Union of Groningen will cooperate in work on the network within Sarajevo itself. Sarajevo is the capital of the Yugoslav republic of Bosnia and Hercegovina.

Pipeline work will begin next summer and is scheduled for completion by the end of 1978. Target date for the completion of the entire project is the end of 1980.

## Calendar . . .

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators, Paris, OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27-October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden, ELMIA Exhibition/Conference Center.

**September 27-October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27-October 1**—Committee on Water Problems. Geneva. ECE.

**September 27-October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 27-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva. WHO.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.



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# World Environment Report

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AUGUST 30, 1976

## Plant Malfunction in North Italy Releases Strong Toxic Chemical

**MILAN**—Thousands of residents of a region near here and their domestic animals have been subjected to thorough medical checkups following the accidental release of a cloud of strong chemical defoliant by a plant malfunction.

Although the accident occurred when a safety valve failed at the Icmesa factory in the Meda-Seveso area on July 10, it was not until four days later that animals began dying and 10 days after that that the substance was identified as trichlorophenol TCDD. The ingredient was used in making hexachlorophene—a bactericide used in body-care goods which has been banned for over-the-counter sales in the United States since 1972 after 36 French babies died of a high dosage contained in talcum powder. It is also similar to a defoliant used by the American armed forces in Vietnam.

As military teams poured into the area, hundreds of persons in the immediate zone were evacuated and given blood tests, and several dozens were treated immediately for internal damage and skin sores. Numerous animals died and many crops were contaminated.

In a similar accident in Great Britain 11 years ago, all contaminated material, including the fabric of the building and its flooring, was stripped, put into drums, and buried. A British expert suggested that the Italian disaster may have to be dealt with by stripping off one foot of soil and tearing off roofs of buildings. Soldiers with flame-throwers went to work destroying the infested vegetation.

Experts were uncertain what the long-term effects on the population of roughly 15,000 would be, but in fear of genetic problems women were urged not to become pregnant for six months after their exposure. In addition, the government has approved therapeutic abortions for the exposed women, and three have already received them. Thus far, however, physicians have found no traces of the poison in the blood of the children tested, but it was acknowledged that any small deposits in the liver would not show up in blood tests.

Experts indicated that some 500,000 tons of the ingredient are manufactured in the world each year and even small doses are considered dangerous.

The company involved, a subsidiary of Hoffmann-La Roche, has accepted full responsibility for the accident. It added that it intended to reimburse farmers for their losses. Two company executives were imprisoned after the incident.

DAVID FOUQUET

## Danes Find High Lead Content in Dishes Sold as Pewter

**COPENHAGEN**—The Danish Government's Food-stuffs Institute has issued a warning on the danger to health of domestic utensils with a high content of lead.

The Institute said that tests of beer mugs, bowls and dishes marketed as "pewter" had such a high lead content as to be capable of causing poisoning when used as containers of food or drink. Examples were quoted of a "pewter mug" which contained 70 per cent lead and 19 per cent antimony and a "pewter bowl" which contained 73 per cent lead and 17 per cent antimony.

Antimony apparently was added to make the lead hard, the report said. The investigation showed that the utensils contained very little pewter and a considerably large amount of lead. In fact, the lead content of some of them was so heavy that they could be used to write with like a pencil.

The Institute wrote to the Industrial Council, the Wholesalers Society and the Retailers Council warning of the "unacceptable" amount of lead and zinc present in utensils that were likely to be used for foodstuffs. Just one dose of lead freed from a mug could cause poisoning symptoms, the Institute warned, and it demanded that buyers should be warned of the health hazard at the time of sale.

In a news release the Institute said that so-called pewter with a high lead content could be recognized because it was much heavier than real pewter and its darker color made it appear more "antique."

The Institute said that further action would be considered when the European Economic Community had taken a standpoint on the question.

CONSTANCE CORK

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## Belgium Rules Out Nuclear Plants On Coast and in North Sea

**BRUSSELS**—After a major, year-long campaign by environmentalists, the Belgian government has decided that nuclear plants will not be built either on the Belgian coast or on artificial islands in the North Sea.

The decision, reached in mid-July, had been a major goal of a massive drive by residents, officials, and environmental organizations. Their offensive, which had forced a major review of nuclear plans by a committee of outside experts, now is held largely responsible for the government's action. The lengthy study released recently had not ruled out the possibility of the coastal or island siting for new nuclear power plants. However, the Belgian government in authorizing the future construction of two additional plants specifically ruled that they would not be built in the controversial areas.

The sites had been eyed by both Belgium and Holland as possible locations for new nuclear stations. One would have been somewhere off the 65-kilometer-long Belgian coast, which provoked the mayor of a town in this area to position a ship with black flags there last summer to attract public attention. The Dutch government also actively considered the construction of an artificial island 45 kilometers off the Dutch coast to house such plants and other polluting industries which can no longer be housed by the port of Rotterdam, already the largest in the world. Dutch backers have argued that such a facility would give work to 30,000 persons but environmentalists have denounced it as "inhuman."

DAVID FOUQUET

## 20-Hour Water Cut Imposed Daily On Residents of Colombo

**COLOMBO, Sri Lanka**—A 20-hour water cut imposed daily on the capital city of Colombo since mid-June has hit the 13 million people of this lush Indian Ocean Island with stunning force and created an unprecedented volume of public opinion against the indiscriminate felling of the country's forests.

The failure of the regular south west monsoon has undoubtedly been the chief cause of the near drying-up of the two large reservoirs that provide Colombo with its water supply. But it has become very clear that a substantial contributory factor has been the large-scale felling of the forest cover of the reservoir catchments.

In addition to the woes of Colombo's citizens, many of whom have no water at all for the full 24 hours of every day due to inadequate water pressure, is the havoc the drought is causing the country's farmers.

With the commissioning of the first stage of the massive Mahaweli river diversion scheme (*WER*, March 1, p. 4), dry-zone farmers expected plentiful water supplies to multi-crop their fields. But the river flow

during the first four months of the year was the lowest on record. The Irrigation Ministry here said that the flow at the diversion point at Polgolla during May is generally 2,000 cusecs. But this May and June it was only 400 cusecs. Said R. S. Cooke, Chairman of the Mahaweli Diversion Board: "The diversion at Polgolla could have been 1,500 cusecs. But the river flow is only 400 cusecs."

Earlier this year, the country's Conservator of Forests, W. R. H. Perera, sounded a grim warning of what is to come if the denuding of the Mahaweli's montane catchment area continued unabated. "Any further deforestation of this area would be tantamount to spiking the Mahaweli at its source," he said.

Ferera said that the remaining forests in the country's wet zone had dwindled to a bare nine per cent of the total land area of the region. The 1.34 million acre montane catchment of the Mahaweli now had a forest cover over a mere 114,000 acres—or eight per cent of the catchment.

On May 23, Prime Minister Sirima Bandaranaike presided over a ceremony marking the first issue of the diverted Mahaweli water to 4,000 acres of paddy land in the dry zone area of Kandalama in North Central Sri Lanka. Speaking to the disappointed peasant farmers who got only a mere trickle of water instead of the cascade they had long waited for, Mrs. Bandaranaike said: "Contrary to expectation the benefit of the Mahaweli diversion has been minimal."

Since then there has been a sustained campaign in the national press and mobilization of substantial public opinion to save the forests and the trees. This campaign has gathered added momentum with the imposition of the water cut in Colombo and the prolonged drought. The Government Meteorological Department says that the rainfall during the first half of this year is the lowest for 66 years.

MANIK DE SILVA

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## SHALE OIL: Brazilian Technology Found Most Advanced

**RIO DE JANEIRO**—Brazil last month was forced to postpone its plans for the commercial production of shale oil—the largest source of alternative energy in the country.

Without making a formal announcement, Mines and Energy Minister Shigeaki Ueki told *World Environment Report* that high initial cost of production of shale oil “momentarily hampered our production plans.” He said it was more sensible to continue experiments to cut down on the high cost and lead time now required for commercial operation.

Going on the premise that there is much more shale containing oil in the world than petroleum and that Brazil has a large share of this shale, Brazilians have been working on shale oil experiments for several years and have developed their own technology—which they claim is simpler and more economical than others—for obtaining synthetic crude from bituminous shale. Thus, technically, there is no obstacle to beginning the construction of a plant that would produce 45,000 barrels of oil per day (BOPD) and save the country a badly needed \$200 million in petroleum imports per year.

But building the shale oil plant would require an investment of \$1.2 to \$1.5 billion, which right now Brazil cannot spare. The money could be raised but it would be at the expense of some other just as important—and perhaps even more so—development plan.

**Major Dilemma**—The dilemma was presented by Minister Ueki this way: “With this \$1.5 billion we could build a hydropower station which would have an output equivalent to 150,000 barrels per day. . . . With half the sum, that is, \$750 million, we could build a distillery which would produce more than 150,000 barrels of anhydrate alcohol per day.”

But while the government is pondering these choices, more than 600 Petrobras (the state oil monopoly) employees—including 60 engineers—are continuing to run shale oil experiments at the Usina Piloto de Irati (UPI) in Sao Mateus, Parana.

Although primitive shale refineries have existed in Brazil for more than a century, the modern phase began only a few years ago. After testing several deposits throughout the country Petrobras settled on Sao Mateus as the most promising site. The pilot plant is working the richest vein of the Irati oil shale formation which begins in Sao Paulo and runs through all the southern states.

**Second to the U.S.**—Brazil probably has the world's second largest oil shale deposits after the United States. Aside from the south, shale is also found in Goias, Bahia, Nordeste, and the Amazon. However, the Brazilian shale has only a 7.5 per cent oil content compared to about 15 per cent for the United States, and 25 per cent for the USSR. The United States has been experimenting for

years and the Soviets even have a few shale refineries operating.

Brazil at first tried the American method, but because of poor quality of local shale, the process was not applicable. This failure forced Petrobras technicians to work out their own system. They succeeded and came up with something that is simpler and cheaper. So much so that after visiting American and Soviet shale oil installations, the Moroccan government chose the Brazilian method. The Moroccans will be shipping some of their own deposits now for test runs at the Brazilian pilot plant. American experts who visited the Sao Mateus operation were also impressed.

**New Method**—Under the Brazilian method, called PETROSIX, slabs of shale are scooped up to the surface, crushed, selected, and then run down from the top of a vertical retort. This last stage is described as an external combustion retorting process in which the shale flows down through two currents of recycled gases, one hot and one cold. This combination of gases generates the heat required to release the organic matter in the shale as hydrocarbon vapors. The synthetic oil vapor is carried out by the gas stream in the form of an oil mist and the residue is released at the bottom. Finally, the oil and other byproducts are separated and the spent shale is buried in the mine pit.

A simplified version of the above is already functioning in the \$30 million pilot plant. For four years now the UPI has shown consistent production capacity of 1,000 barrels of oil per day, 36,500 cubic meters of light gas, and 17 tons of sulphur—all this extracted from 2,200 tons of shale.

Plans for the full scale commercial plant to be built at the site of the UPI call for daily processing of 112,000 tons of shale, with the resulting production of 51,000 barrels of oil, which will yield 45,000 barrels of synthetic crude, 1.8 million cubic meters of light gas, 900 tons of sulphur, and 490 tons of liquified petroleum gas (LPG).

**Other Products**—The reserves at Sao Mateus alone are estimated at the equivalent of 630 billion barrels of oil, which is almost the size of Brazilian petroleum reserves, before the Campos find, and which is sufficient to keep the projected commercial plant operating for 30 years. But the 65 square kms. shale reserves in the area also contain an estimated reserve of 10 million tons of sulphur, 4.5 million tons of LPG, and 20 billion cubic meters of light gas.

American experts estimate their cost of producing a barrel of oil from shale would come to about \$20. The Soviets will not give an estimate. Arabian crude now sells for about \$11 a barrel. Petrobras estimates it could produce the oil from Irati shale for about \$12.

That sounds close enough to the price of imported crude to make it economically feasible to go ahead with the project. But there is more to the story.



**Initial Costs**—In the first place the \$12 per barrel figure is a long term estimate and the initial cost of producing shale oil requires an estimated investment of \$30,000 per barrel, while offshore oil costs only \$8,000 and onshore even less. The UPI is a pioneering project and, as such, investment in it is always risky. Bugs often crop up in new systems, and it takes time and money to work them out. Additional time and money would increase both the total cost and the price per barrel.

But oil shale cannot be dismissed, least of all in Brazil. Aside from the synthetic crude, it can provide such badly needed byproducts as sulphur, LPG, and light gas. The pilot plant is continuing its experiments and might come up with further breakthroughs, and so might other countries.

GEORGE HAWRYLYSHYN

## Greece Launches Broad Program To Tap Underground Waters

**ATHENS**—The Greek government has launched a broad program for the exploitation of the country's underground waters in an effort to solve acute irrigation problems. In announcing the program, Christofer Stratos, Minister of Public Works, said Greek experts are cooperating with foreign firms for the spotting of underground waters "and the results have so far been highly satisfactory."

The Minister said that although Greece is a mountainous country, it has a great amount of stored underground waters. "If processed well they could solve long-term irrigation and water supply problems in many areas," he said.

Stratos added that the World Bank is financing part of the project and has already allocated a \$25 million loan for 1,000 water drillings in Central Greece to irrigate 100,000 acres of land. In addition, he said, a Swiss firm has undertaken a study for utilizing underground waters to irrigate 340,000 acres in the same area, the country's most fertile region. Stratos said that searches are also planned in the area south of Athens, to hopefully solve the longstanding water shortage problem of the capital.

Stratos stressed that the government is determined to proceed with the ambitious plan as quickly as possible because "it will considerably increase the farmers' income and put an end to the water shortage threat for many cities."

KYRIACOS CONDOULIS

## Mexico's Campaign Against Smoke And Dust Pollution Pays Off

**MEXICO CITY**—Mexico's five-year campaign against smoke and dust pollution by industry is paying off in more ways than one, says the chief of legal compliance in the federal Sub-Secretariat of Environmental Improvement, Mario Alberto Chavez Gonzalez. Eighty per cent

of those firms identified as polluters have complied with the law; contamination by smoke and dust has been reduced by 50 per cent and 595 non-complying factories have paid fines totaling more than \$120,000 into the federal Finance Ministry, he said.

Included on the original rolls of offenders were businesses ranging from small, one-family bakeries to huge cement factories and foundries. The program began in November, 1971, when all businesses which emitted pollutants were given six months in which to assess their situation, study their problems, and determine how they might be solved.

In May, 1972, the program's second phase began. Industries were given two years in which to install antipollution equipment or to make adjustments in machinery or operations necessary for the elimination of atmospheric contamination. The government offered technical advisors to work with business and created special tax advantages for the importation of clean-air equipment.

"The majority complied with the law during this period," Chavez Gonzalez said. But for those which did not, the system of sanctions began in June, 1974. Inspection of industries during the subsequent two years turned up some 4,900 acts of violation of the anti-pollution laws, he said.

"We feel that nothing justified incompliance. Businesses had sufficient time to comply with the law, we offered free technical advisors, and there were advantages for those importing anti-contamination devices," he said. Factories found not complying during the two-year inspection program were given 105 days in which to defend their continued pollution or take positive steps to eliminate it. Only after that grace period were fines imposed.

Chavez Gonzalez noted that of the many violators found during that time, "most now comply." As of August 1, 1976, only 1,712 violations were recorded by the subsecretariat. Approximately 600 of these are now in their grace period, while 1,132 have been the subject of economic sanctions. Besides those from whom fines have been collected there are 537 firms facing fines totaling \$200,000, he said.

The maximum fine permitted under law is \$400 per factory—and Chavez Gonzalez observed that some companies have as many as 10 factories. If an industry fails to comply after the first fine, the amount is increased to \$800 per factory. If there still is no compliance, the business may be closed by the government until clean-air standards are met. Thus far, two cement factories in the state of Hidalgo and one foundry in Mexico City have been so closed.

But the single greatest atmospheric offender in Mexico City and most of the nation's large cities remains the internal combustion engine. Mexico City has 1.7 million registered motor vehicles, plus 5,000 in daily commutation. As of March, some 25,000 vehicles, 8,500 trucks, and 500 motorcycles had been inspected. The maximum fine for violating the anti-pollution law for vehicles is \$20.

KATHERINE HATCH



## OECD Will Review System for Sea Dumping of Radioactive Waste

*DUBLIN*—The Nuclear Energy Agency of the Organization of Economic Cooperation and Development (OECD) will shortly inaugurate a full review of the system for dumping radioactive waste at sea, at the request of the Irish Government following a recent nuclear waste spill into the sea south of Ireland.

The spillage occurred when containers of radioactive material were being tossed overboard from a ship at an international dumping ground 370 miles south-west of Mizen Head on the Irish south-west coast. A container of waste from Belgium burst open as it hit the water, scattering cotton rags, gloves, paper, and some empty plastic bottles, which floated on the surface. Fortunately, the floating waste material was immediately recovered by the ship's crew. Another container being dumped at the same time failed to sink at first, but was finally sent to the bottom—three miles down—without any loss of radioactive material.

Although the incident occurred last June, it was a month before it was publicized in newspaper reports. Only then did the Irish Government Information Service acknowledge the fact and say that the activity level of the waste was very low and the possible radiological hazards were non-existent.

The dumping had been organized under the auspices of the Nuclear Energy Agency of the OECD. The Government Information Service said that "a minor incident" occurred on June 26, involving two containers from the Eurochemic Company, Mol, Belgium. "One floated and the other burst on immersion in the sea. The floating container was sunk and the material released from the burst container was immediately recovered. The rest of the dumping operation was suspended at the request of the Minister for Transport and Power and of the other countries concerned."

It has been planned to make a total of three voyages to the dumping grounds to dispose of waste from Belgium, Britain, the Netherlands, and Switzerland. The waste recovered from the broken container was taken to the United Kingdom Atomic Energy Research Establishment at Harwell. There it was examined initially on July 6 by experts from the NEA, Belgium, the Eurochemic Company, and the United Kingdom.

"A full investigation was carried out on July 9 by NEA specialists," said a Government statement. "The investigation showed that the container had burst due to a human error at the Eurochemic Company. Empty polythene bottles had been mistakenly included in a sea disposal package. The investigators found that the incident was handled in a thoroughly professional and competent manner. The container that floated was sunk and no activity was released. The probe also found that the activity level of the waste was very low and that the hazards were non-existent. The chances of such an incident happening again were decided by the investi-

gating team to be negligible."

Nevertheless, at the request of the Irish Minister for Transport and Power, Peter Barry, the NEA will fully review the system and safeguards for dumping radioactive waste at sea.

TOM MACSWEENEY

## International Whaling Commission Agrees To Reduce Kill Quotas

*LONDON*—After a week of hard bargaining at their twenty-eighth annual meeting, held in London in late June, the 16-member nations of the International Whaling Commission (IWC) agreed on quotas reducing the total number of whales to be killed next year from 32,578 to 26,699. And for the first time, quotas have been set for the taking of minke, sperm, and sei whales in the North Atlantic. As expected, most of the objections to reduced quotas came from Russia and Japan, whose combined fleets account for 90 per cent of the annual whale catch.

The Commission heard statements from its member governments and from various international organizations. One in particular was a joint statement from conservation groups around the world calling for the implementation of the ten-year moratorium on all commercial whaling voted at the 1972 Stockholm Conference. The groups included the Sierra Club International Programme in New York, and from Britain the World Wildlife Fund, Friends of the Earth, the Royal Society of Arts, and many others. Once again, however, the IWC rejected such a ban.

Last year's quotas on some whale species were not reached, the IWC said, suggesting that stocks had fallen to a dangerously low level. Probably because of this, Japan reluctantly agreed to a reduction in the sperm whale quota for the Southern Hemisphere.

The commission takes the advice of its scientific committee on quotas. This year IWC scientists advocated a new method of "yield by weight" for calculating the levels to be caught. Instead of numbers of whales, the quota would be set by a maximum weight plus limits on the length of individual whales. The committee felt that this would provide more accurate control of the age and size of whale caught. The Soviet representatives argued against this new methodology.

Friends of the Earth (FOE), along with other conservation groups, agreed that the reduced quotas are a step in the right direction, but indicated it was woefully inadequate as a means of giving the whale stringent protection. The FOE is urging its members to support a motion to be presented to the House of Commons by member of parliament Emlyn Hooson. The motion calls on the government to press for the ten-year moratorium and to ban all imports of sperm whale oil, at present amounting to 8,000 metric tons a year. British industry, it will be suggested, could well follow the United States in developing substitutes.

BARBARA MASSAM



## Briefs...

### New Director of FAO Says Organization Needs Shakeup

Fearful that the U.N. Food and Agriculture Organization (FAO) "is in danger of becoming an ivory tower of academics," the new director of the organization, Edouard Souma, has proposed an austerity program aimed at increasing the ability of the FAO to feed the world's needy.

"This organization needs a shake-up now," Souma told a meeting of the FAO's governing council in Rome. He then added, "At a time when it can be openly said by many that the UN system is facing a crisis of confidence and it appears that the organization is confronting a turning point in its history, a new departure is essential in the history of the FAO."

Specifically, said Souma, there was a "need for a balance, particularly as regards the allocation of resources to unduly elaborate, over-theoretical and diffuse studies."

To change this, Souma called for: a sharp reduction in the number of FAO meetings and study reports; large reductions in the number of new staff openings and promotions of current staff; financial priority to programs producing concrete, short-term food production aid to developing nations; and decentralization of staff based in FAO's Rome headquarters.

### Use of Synthetic Chemicals Under Scrutiny in Argentina

The biochemical and pharmaceutical department of Buenos Aires University is preparing a series of studies on the synthetic chemicals used in the country and their possible danger to human life.

Currently, Argentina has no testing and controlling agency, according to pharmaceutical university investigators.

The testing will try to determine the degree of danger presented by chemicals, especially as possible factors in cancer and genetic mutations. It will also attempt to catalogue all the synthetic chemicals used in the country.

Argentine worry is spurred by the recent escape of chemical gases in northern Italy (see p.1). Without a national controlling agency, it is difficult to determine whether the same chemical causing the problems in Italy is used here. University and industrial sources consulted seem to think not.

### Five South American Nations Develop River Plate Basin

A \$100 million fund for the development of the River Plate basin has been established by five countries. The fund will finance studies, projects, and works in the basin region. Argentina, the last country to agree to the fund's formation, signed the agreement this month. The other members are Brazil, Uruguay, Paraguay, and Bolivia.

### Czechs Devise New Method For Leaching of Sulphur

A new method of biological leaching of sulphur directly in lignite mines, which is expected to cut down sulphur exhalates of the lignite-based power stations in north-west Bohemia, has been patented in Czechoslovakia.

Developed by the Hornicky ustav CSAV (Mining Institute of the Czechoslovak Academy of Sciences), the method proved capable of reducing sulphur contents in brown coal (lignite) from 9.35 per cent to 3.16 per cent in ten days at the cost of \$.10 per metric ton. Average cost of coal extraction is about \$4 a ton.

The coal seam is first loosened by controlled explosion and then leached. The leaching solution must ensure the introduction of oxygen, car-

bon dioxide, and nutrients for bacteria, and also an outlet for oxydation products. A type of thiobacteria present in coal seams proved to be most useful in the leaching process. As these bacteria need not be fed additional nutrients, local mine water suffices. The Institute is now working on the problem of the regeneration and exploitation of the leaching solutions.

It is hoped that the recently-approved method will contribute to the protection of natural environment, particularly in the north-west Bohemian lignite coal basin, where sulphur exhalates have been devastating forests for decades.

### Formerly Extinct in Britain Great Bustard May Fly Again

An attempt is being made to reintroduce the Great Bustard into Britain, where it has been extinct since the nineteenth century.

The Bustard, a large bird which thrives on open tracts of country, is on the decline in other areas of Europe, and its extinction in Britain was attributed to the enclosure of open fields and the use of the horse-hoe which destroyed eggs laid amongst crops.

The Great Bustard Trust, set up for the purpose, will make use of an enclosed part of Porton Down in the county of Wiltshire, under Ministry of Defence control. This undeveloped land is not open to the public.

### Above-Ground Storage For North Sea Oil Approved

Following an extensive environmental impact study on the storage of North Sea oil, the Shetland Island Council has opted for above-ground facilities.

The decision ended a protracted dispute between the local authorities and the two major oil firms, British Petroleum and Shell. The Council had earlier demanded underground



storage caverns for the Sullom Voe terminal, which could be receiving some 800,000 barrels per day of North Sea oil by 1980, through the Brent and Ninian pipelines.

The Sullom Voe Environmental Advisory Group studied the implications and decided that neither type of storage tank offered an overriding advantage. The subsequent 133-page report considered all aspects of the situation including wildlife, fisheries, fire prevention, tanker navigation, and storage systems. The study also covered the amount of rock and peat to be excavated, emissions of hydrocarbons, visual impact, long-term environmental effects water seepage, oil leaks, and health and safety aspects.

The council backed off from its original position while the industry agreed to operate a single processing plant instead of the two separate facilities planned. The study is regarded in some quarters as marking a new approach to conservation in connection with major development work in Western Europe.

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### Mathematical Model Predicts Height of Waves in North Sea

A mathematical model that can be used to predict the height of waves in the North Sea is being developed at the Department of the Environment's Hydraulics Research Station in Berkshire, in collaboration with the Institute of Oceanographic Sciences and the Max Planck Institute for Meteorology in Hamburg, Federal Republic of Germany.

The model, developed in response to the needs of civil engineers designing structures for the exploitation of North Sea oil and gas, will first calculate the waves in the most severe storms of the past ten years. This will be done from observed wind conditions during this period. It will later predict the most severe waves likely to be occurring during the 20 year "life span" of a marine platform.

### Medicinal Marine Plant Found By Biologists Off West Cork

The Irish Republic may have found a marine resource worth millions of dollars in medical and other scientific applications. The results of finds made by two Welsh marine biologists off West Cork indicate that they have located a marine plant, *Gracilaria*, a reddish growth of the carrigeen-moss type, which produces the widely used laboratory culture medium—agar.

The discovery comes at a time when the world's major suppliers, the Japanese, are becoming worried about their own stocks of the plant and have been producing it in simulated marine farming conditions. There is no known commercial source of agar in the British Isles or European areas, according to the biologists who made the finds. Australia and Malaysia, with Japan, have been the major sources of *Gracilaria*, which is used in virtually every scientific laboratory.

The biologists who made the discovery are Doctors David and Eifion Jones of the University of Bangor in North Wales and they made the find off Sherkin Island in West Cork.

They said that conditions off the West Cork coastline were ideal for the cultivation of the plant, but they suggested further exploration of the entire coastline might yield good conditions also.

The biologists also found a mullet nursery, stretching perhaps 50 to 100 miles out to sea. This fish is not liked in Ireland, being regarded as coming from dirty or polluted waters. But it is considered a delicacy on the European Continent, where it can fetch up to 30 pence a pound.

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### Bavaria Establishes Huge New National Park

The State of Bavaria in The Federal Republic of Germany has declared a 50,000 acre area of the

Berchtesgaden Alps a National Park and has established as a "nature reserve" a 60 acre rocky area in Upper Franconia.

The new National Park, established by the Bavarian Council of Ministers last month, includes the picturesque Koenigssee, the Watzmann and Hochkalter Alpine ranges, the Steinerer Meer, as well as the southeastern Reiteralpe. It will be called the Berchtesgaden Alpine Park. All flora and fauna are protected in the park and any destruction, damage, or activity that would cause scenic changes are forbidden.

The Upper Franconia area, called "Wojaleite," is located west of Rehau near Hof and is rich in minerals and semi-precious gem stones. Serpentine, extremely rare elsewhere in Germany, is found there as well as cream garnets. Rare plants that occur only in rocky areas are also found in the new reserve. These include serpentine pines, striped fern, and flowers.

The action effectively bars gem stone mining or prospecting and violations can be punished with fines of up to \$20,000.

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### Kuwait Mobilizes For Mass Construction of Housing

Kuwait's Minister for Housing and Chairman of the Board of Directors of the National Housing Authority recently reiterated his theme that 1977 would be the "Year of Housing Construction" and that "every Kuwaiti citizen will be able to get a house of his own by 1980."

Addressing a wide-ranging news conference, Howard Mubarak Al Ayyar said that the government plans to build some 60,000 housing units in the next few years and that the housing crisis in the country will soon turn into a "thing of the past." The Government of Kuwait is mobilizing all sources—easy finance, cheap land, and supplies of construction materials.

Both local and international companies will be given contracts for



implementing the projects, he said. Priority in housing distribution will be in accordance with the geographical and population centers of the country, which will mean that the present system of distribution will have to be discarded, the minister added. Presently all Kuwaiti applicants for housing, registered with the Credit & Savings Bank, are allotted houses on a "first come, first served" basis.

### West Germany Passes Tough New Hunting Regulations

The Federal Council of the Federal Republic of Germany recently passed new regulations requiring applicants for future hunting licenses to demonstrate a knowledge of protection and conservation of forests and of game types.

The regulations were incorporated into the federal hunting law at the insistence of the Bavarian State Ministry for the Protection of the Environment. Bavaria is West Germany's only state with its own Environmental Ministry.

### EEC Commission Favors New Rules on Pesticides

The European Economic Community (EEC) Commission has submitted to its Council of Ministers recommendations for protecting people from the hazards of pesticides.

The EEC Commission urged decreased usage of organo-chloride pesticides, strict control of emissions of organo-chlorine compounds, and control of residues in food and animal feed.

Under its Environment Action Program, the Commission has concluded a series of studies on organo-chlorine compounds. The studies included a survey of all available data on pollution levels found in air, water, food, human fatty tissue and breast milk, and a study which attempted to establish relationships between exposure levels and possible effects on humans.

The latter study, however, is thus far inconclusive because of a lack of scientific information and difficulties in interpreting the data.

The Commission had previously proposed the fixing of maximum levels of pesticides permissible in and on fruit and vegetables, and is now preparing a similar proposal on cereal, animal feed, and products of animal origin.

### China To Hold Exhibition Of Pollution Control Equipment

The first-ever exhibition in the People's Republic of China of waste water treatment systems and other anti-pollution equipment will be held in Peking from September 2 to 15. Arranged by Japan's Association for provinces and these products were Trade, nearly 100 Japanese firms, including 65 manufacturers, will participate in this exhibition. Equipment for the prevention of air pollution and for the treatment of industrial waste, garbage, and contaminated oil, as well as related machines and components, will be displayed. China has been showing mounting interest in environmental problems over the past few years.

## Calendar...

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 27-October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27-October 1**—International Trade Fair on Waste Handling, Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden. ELMIA Exhibition/Conference Center.

**September 27-October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27-October 1**—Committee on Water Problems. Geneva. ECE.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 17-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.





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## UN Conference on Law of the Sea Begins Fifth Session in New York

*UNITED NATIONS, N. Y.*—The UN Conference on the Law of the Sea began its fifth—and perhaps most important—session here on August 2. Some 2,000 delegates from 157 nations will be meeting in closed-door negotiations until Sept. 17 in an attempt to iron out six bitterly contested issues that must be resolved if a treaty on international sea law is finally to be achieved in the target year of 1977.

Altogether, the Conference—which began here in 1973 and subsequently held meetings in Caracas, Geneva, and in New York last spring—has made great strides on about 80 per cent of the draft articles, including such matters as the establishment of a 12-mile territorial limit for coastal states and the right to control fisheries and mineral wealth up to 200 miles off their shores. Nevertheless, many basic differences still exist between the Third-World group of about 100 countries (52 of which are landlocked) and the developed countries.

Chiefly at stake are the rights to the exploitation of billions of dollars worth of minerals—among them nickel, manganese, copper, and cobalt—that lie in lumps or nodules on ocean beds outside the 200-mile territorial limit. The technology and economic feasibility of such deep-sea mining has already been established.

The Third-World countries maintain that such unparalleled wealth is legitimately a universal heritage that should be shared in equitably by all nations and that should be monitored by a new international sea-bed authority especially created for this purpose.

The coastal-industrial nations, on the other hand, are loath to give up their natural advantages of large-scale capital financing and technological know-how, and thus far are opposed to anything, even to the sharing of potential royalties. One concept, however, that is gaining adherents would be the use of the World Bank to finance “non-national” mining enterprises engaged in by the international seabed authority.

Other sticky issues on the agenda include the “legal” status of the newly announced 200-mile fishing zone limits announced by the U.S., Canada, and Mexico, among others; regulations concerning research activities in this zone; and mechanisms for putting the Law of the Sea treaty into effect and for settling disputes arising thereafter. One peripheral issue is the seeking of some landlocked nations to gain legal access to the sea by transversing neighboring coastal states.

Close observers of the Conference are not sanguine that all, or indeed any, of these critical issues will be compromised to the satisfaction of the contending groups. The fear is again being expressed, much as it was at the UN Conference on Human Settlements recently held in Vancouver, that bloc-power politics may override environmental concerns.

President of the Conference is Hamilton Shirley Amerasinghe of Sri Lanka; heading the Third-World bloc is Nepal's Shailendra Upadhyay; and again leading the 100-member U.S. delegation is T. Vincent Learson, former board chairman of International Business Machines. Secretary of State Henry A. Kissinger said he would attend the Conference during the second week, and give it his personal attention thereafter.

A.W.

## Number of Nuclear Power Plants Abroad Shows Sharp Increase

*WASHINGTON*—The third annual international nuclear reactor survey recently completed by the Atomic Industrial Forum (AIF) shows that nuclear power plant commitments outside the United States reached a total of 343, 355 net megawatts electrical (Mwe), which is an increase of more than 17 per cent from 1975, when commitments totaled 294,278 Mwe, and more than 56 per cent from 1974, when they were 220,575 Mwe.

Of the reactor types already chosen in these commitments, the Light Water Reactors pioneered in the U.S.—both Boiling Water and Pressurized Water Reactors—account for nearly 80 per cent of the capacity, which is up slightly from last year's survey. The survey also shows that the number of countries committed to using nuclear energy for producing electricity has risen to

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41 from 38 in 1975 and 32 in 1974. The three added this year are Indonesia, with commitments for 2,900 Mwe, Poland, with over 440 Mwe, and Turkey, with 600 Mwe.

Cuba, Kuwait, Libya, New Caledonia, and Peru have also announced long-range plans to build nuclear power plants, but because the details are not spelled out, these countries are not included in totals derived from the AIF report.

Currently, there are 18 countries outside the U.S. producing electricity with nuclear power. Of these, Switzerland continues as leader: By year's end it will have capacity to produce 18 per cent (1,006 Mwe) of its electricity with nuclear power. The German Federal Republic is next with 15 per cent (7,300 Mwe). Sweden follows with 13 per cent (3,180 Mwe); then the United Kingdom, 10 per cent (8,097 Mwe); France, 10 per cent (3,320 Mwe); Japan, 8 per cent (7,085 Mwe); Spain, 5 per cent (970 Mwe); Pakistan, 5 per cent (125 Mwe); Argentina, 4 per cent (319 Mwe), and India, 3 per cent (598 Mwe).

Iran has now moved to fourth place among the nations in total nuclear plant commitments with its new program to install 27,200 Mwe capacity by 1994. France continues in first place, with total commitments for 39,345 Mwe (47 reactors). Spain is second, 35,845 Mwe (38 reactors); the German Federal Republic third, 28,683 Mwe (31 reactors); Italy fifth, 21,386 Mwe (25 reactors), and Japan sixth, 20,002 Mwe (29 reactors).

In the United States, 60 power reactors with a combined capacity of 41,954 Mwe are presently licensed to operate. They account for more than 8 per cent of total U.S. capacity. It also has 71 reactors under construction (75,011 Mwe), 16 with limited work authorizations (16,757 Mwe), 72 on order (83,147 Mwe), and nine committed with letters of intent (9,680 Mwe). This makes the total U.S. nuclear energy commitment 228 reactors with capacity of 226,189 Mwe.

The AIF report was prepared in consultation with utilities, manufacturers, and government agencies around the world. The Atomic Industrial Forum is an international association of utilities, manufacturers, unions, universities, financial institutions, mining and milling companies, and others interested in the peaceful uses of nuclear energy.

## Pollution May Doom Istanbul's Fabled Golden Horn in Decade

**ISTANBUL**—This municipality has signed an agreement with the Turkish Chamber of Chemists for the environmental protection of the Golden Horn, an extremely polluted bay in Istanbul. Under the accord, environmental control of the area—which has become an industrial center in recent years—will be assumed by the Chamber on behalf of the municipality.

The Golden Horn, a narrow, two-mile-long bay spanned by three bridges linking Istanbul's modern

quarters to the ancient city, was once the city's best residential and resort area. In the last quarter-century, however, industries have located there in helter-skelter fashion. Today, hundreds of varying sized factories are operating all along the coast; shanty houses and slums have sprung up on the hills, and the sea and the air, formerly clean and pure, have now been completely polluted. Shipyards, workshops, factories have been filling the waters of the Golden Horn with waste and dirt. Experts say that the Golden Horn is filled with four inches of industrial waste every year. They estimate that unless immediate measures are taken, the bay will virtually cease to exist within the next 10 years.

According to municipal authorities the cleansing of the Golden Horn would cost about \$300 million—money that Istanbul simply has not got. Municipal authorities are trying to get financial support from the central government but the future of the Golden Horn does not appear on top of the priority list, which is dominated by the problems of sewage, water distribution, new housing to replace the slums, energy, public transport, and communications.

Nevertheless the municipality is now working to save the Golden Horn by "feeding" it with cleaner waters through new canals from the Sea of Marmara and the Black Sea. Another possible solution is to completely "fill" the bay and have it become an industrial area.

The same lack of public funds and enforceable environmental laws is also causing a rapid deterioration of the environmental situation in Ankara and other major cities throughout Turkey. Both foreign and Turkish experts have repeatedly stated that unless measures are taken, the Sea of Marmara and part of the Aegean and Mediterranean coasts will look like the Golden Horn in 10 or 15 years from now.

SAM COHEN

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## SPECIAL REPORT: Norway—The Environment Vs. the Oil Boom

*OSLO*—Protection of the environment during what promises to be a radical transformation of the Norwegian society and economy as a result of the North Sea oil boom has become a major national preoccupation in this country.

In facing up to this problem, Norway has opted for a policy that attempts to strike a balance between unprecedented growth and its traditional love of nature. As a result, the Minister of the Environment has become a major political figure given serious consideration as a future prime minister. Moreover, the environmental and fishing interests in the country recently stunned oil planners and developers by forcing a one-year delay in exploitation of the North Sea oil fields north of the Arctic Circle.

**Get Rich Slowly**—The country seems to have adopted what is generally considered to be a "get-rich-slowly" approach to the development of its vast oil resources. Anxiety over the possible impact on the economy and on the already delicate population patterns in the sparsely-settled Arctic north are other factors fueling the environmental campaign here.

And, as if this concern for the environment needed any justification, the country in recent years has fallen victim to the winds that blow acid sulphur compounds from the industrial areas of the United Kingdom and Central Europe to foul the snows and rivers of Norway.

This type of transfrontier pollution is the subject of many talks between Norway and its neighbors. In June a special 20-nation conference was sponsored by Norway as a second stage in alerting other countries of the special danger facing Norway. At that time it was recognized by the participants that acid precipitation was a recognizable threat to fishing streams and perhaps forests and that further work should be done in this area.

**Not A Romance**—Speaking of this conference a few days later in her Oslo ministry office, Norway's dynamic Environment Minister, Dr. Gro Harlem Brundtland, felt that "Now we can enter the action phase" on acid precipitation. Recalling her former occupation as a physician and the possible health effects of this phenomenon, she added "It's not just a romantic question." She also pointed to the large sums of money wasted because of corrosion of metals stemming from acid precipitation and felt that the next step would be to draft a treaty reducing emissions of acid sulphur compounds.

This question, as well as the others involving Norway's development and its impact on the environ-

ment have been her responsibility for two years. Of course, even before her arrival at the Ministry, Norwegians had shown great interest in their environment. Blessed with oceans, fjords, mountains, and waterfalls that are considered a national asset, Norway sought to protect them years ago. As an example, most of the country's electricity is the result of hydroelectric power generated by the thousands of waterfalls there. Yet in 1972, it was decided that to continue the unrestricted exploitation of waterfalls for this purpose might do irreparable damage to the scenic beauty of the country. Thus it was decided that 93 rivers and falls would be permanently protected and 57 would be preserved for 10 years.

In 1962 the country had also instituted a licensing system for new industrial activity which was very tight on pollution standards. Other controls have been applied and in 1972 the Environment Ministry was created.

**Powerful Ministry**—Since then and since the development of the North Sea oil fields, more force has been given to the country's environment policy. One source of power is the fact that the Environment Ministry, in addition to being specifically responsible for normal environmental and conservation duties, is also in charge of physical planning in the country. Dr. Brundtland has also been one of the most active and visible members of the government.

But all these factors coalesced with the awareness that the country's entire character could be altered by the oil boom and that this process should be limited, gradual, and controlled. "In the last four or five years," Dr. Brundtland said in a recent interview, "the deliberate balance between development and protection of resources and of the established pattern of settlement has been very much in focus." For a major maritime and fishing country, like Norway, she added "It was important not to destroy the traditional uses of the oceans. The economic effect of oil has broad environmental and cultural impact. We therefore decided to proceed at a moderate pace in order not to increase the changes in people's lives negatively." She said this was why regulations in the Norwegian sector of the North Sea are the toughest and the reason why the production ceilings have been set relatively low.

These policies, in turn, have also been confirmed by the country's other ministries responsible for oil development. An official of Statoil, the government oil company, agreed that "We do have obligation to the international society." The country's Oil Directorate is also charged with making sure environmental precautions are taken in the oil fields.



**Strict Prevention**—This is precisely why the Environment and Fisheries Ministers recently obtained backing from a majority of their colleagues to surprisingly force a delay in the startup of development of the Arctic oil fields from the anticipated date of 1977 to 1978. Supporters of the delay argue that working in the Arctic seas present new and unknown dangers that must be explored before exploitation can begin. Development above the 62 parallel will not begin, says Dr. Brundtland, "unless it is within an acceptable level of risk . . . for the past 10 years we have had luck but we are entering a more difficult area." She mentioned the potential problems of blowouts and corrosion at low temperatures and the impact on maritime biology.

"We have been very strict on the preventive side," she added. "Some people say it is unwise and unrealistic, but if you aren't, there won't be pressure to

find solutions. Morally and ethically, it is very important."

Fishing and population movement are among the other major ecological concerns of the country. Like some other countries it has been worried about the possible depletion of fish stocks in the North Sea. And it has for years fought against migration of population from the Arctic north to the more hospitable south and has begun to reverse the outward bound trend in recent years.

Yet ironically the country does not display as much concern as others in certain fields. It still allows the destruction of baby seals in the traditional brutal fashion and some of its many mines are worked in the open-pit style with no afterthought of the environmental and scenic consequences.

DAVID FOUQUET

## ECE Issues Report in Geneva On North American Coal Production

*GENEVA*—The United Nations Economic Commission for Europe (ECE) has predicted that coal production in Canada and the United States may grow at an overall rate of 4.6 percent annually up to 1985, despite the impact of environmental curbs.

The study was prepared for and discussed by the ECE Working Party on the Coal Trade that met here in late June. It predicted that coal's share in total energy consumption will rise from 19.2 per cent in 1973 to 21.5 per cent in 1985.

From 1951 to 1961 yearly, North American coal production fell steadily from 522 million tons to 388 million tons. The following decade saw a reversal, with a steady recovery to 565 million tons. Since then, the ECE reported, the industry has operated in "a stop-go climate of uncertainty."

The position of coal changed again in the early seventies when the energy situation called for a general reassessment, even before the so-called oil crisis of 1973-74. Availability of natural gas had begun to dwindle, domestic oil deliveries fell, checks to the development of nuclear power appeared, and the promise of coal was dimmed by a number of factors, the study found. Labor disputes and tight safety and health regulations held down productivity, the ECE said, adding that environmental laws pushed up costs, high-sulphur coals found a more restricted market, and access to cheap, open-cast coal fields was limited.

"However, domestically-produced coal did emerge as a means of reducing dependence on foreign oil at the time of oil supply cuts and price increases," the report stated.

One result was to multiply by three the tonnage of reserves of economically recoverable coal in North America between 1968 and 1975. North American coal reserves are now big enough to satisfy demands for coal at the 1975 level for 375 years, the ECE stated. The reserves are capable of meeting almost any foreseeable demand by 1985 at prices close to 1972-73 levels, as Project Independence suggested in 1974, according to the ECE.

The ECE noted that there have been calls for greatly increased production of coal in both Canada and the United States with the aim of reducing or even eliminating oil imports. Growth rates of production of 10 per cent for the United States and of 11 to 18 per cent for Canada have been suggested.

The report said that in the United States utilities may be ordered to burn coal instead of oil and subsidies may be granted to small enterprises which open up low-sulphur underground coal mines. A moratorium on federal coal leases in the United States has come to an end, it said.

However, the study warned that "the hazards and uncertainties of the domestic and world energy markets must affect the future role of coal. Other major factors are the roughness of established environmental protection standards and the industry's capacity . . . to give coal an environmentally better name."

The report said that two major uncertainties persist: "The higher demands for coal have to be met in a situation where calls for environmental protection have become more insistent and there is always the possibility that domestic coal may be called on to compensate for unforeseen shortfalls or other forms of energy, whether of a temporary or lasting kind."

WILLIAM G. MAHONEY



## Environmentalists Unhappy With Italy's New Water Usage Law

ROME—Newly-enacted legislation on water usage in Italy has set its sights on solving water pollution problems within the decade. The new law spells out the rules for an environmentally sound handling of water—from monitoring and tapping to distribution, to sensible use by communities and industry, on down to purification and final disposal of effluents and sludges.

Public agencies will be in charge of the ultimate purification of waters and the cost of the national purification plan will be borne by the polluters themselves, who will be taxed according to the type of their effluents.

The new rule allows the polluters a maximum of nine years to meet set standards of purity in their effluents. More lenient standards are allowed to old industrial plants during the first three years of the program.

Semi-official estimates set \$6.25 million as the total cost of the national purification plan for the first five years, with an outlay of about half that anticipated for industrial purification plants. It is anticipated that these investments will rise by between 0.2 per cent to 0.5 per cent of the G.N.P. in each of the next five years, and open up 80,000 to 250,000 new jobs.

Many environmentalists, however, are not happy with the new law. They maintain that the "effluents standards approach" is environmentally wrong in itself. Their rationale is that allowable effluents from a crowded and industrialized area, when added together, raise the local pollution to unacceptable levels overall. They also maintain that less stringent dilution standards of effluents in non-developed areas could result in less spending for wastes treatment by these communities and industries.

Further criticism comes from the fact that the new law stops all legal proceedings against old polluters. Businessmen and city councils responsible for water pollution have only to apply for a new permit to discharge their effluents, and abide by the relevant conditions, to be free from prosecution. The control authorities will grant the permit if current pollution is not raised and if polluters promise to take steps to reach in nine years the standards set by the law.

With this criticism in mind, some respected newspapers have branded the water law "a permission to pollute." However, a national authority on water standards has maintained that the new law offers a good chance for reversing the current spoiling of water resources. Roberto Passino, director of the Institute for Waters of the National Research Council, commented in the influential Milan daily *Corriere della Sera*: "This law is certainly not better than the British rules, which are based on the basin authorities. But it is a realistic law and it opens the way to future progress . . . It is the last big chance for a consistent turn toward a good future for our water resources."

For discharges of sludges in the open sea far from the Italian coasts, the permit with prescriptions will be

granted by a selected committee of ministers, after consultation with the foreign ministry. Penalties of up to two years in prison and fines of ten million lire (\$12,000) are established for those who ignore or break the rules.

Italian industry, with exceptions, is happy with the new law. Luigi Felici, a spokesman for the National Association of Industries, CONFINDUSTRIA, told the *World Environment Report*:

"Although it is a compromise, this law is a firm starting point for the planners of our industries, who have to choose the necessary equipment and anti-pollution technologies. Italian industry is in full swing of a technological overhaul and our businessmen welcome a firm starting point for their long-term planning, especially for non-productive expenses like effluent treatment."

VITTORIO PESCIALLO

## UN Information Service and UNEP Conduct Desert Environment Study

GENEVA—Leading United Nations scientists recently met here with 30 participants from developing countries to study desert environment.

The Graduate Study Program was organized by the UN Information Service with the assistance of the UN Environment Programme (UNEP). The UN agencies noted that more than one-third of the earth's land surface is arid or semi-arid and is affected by desertification. The living conditions of some 60 million people in poor countries who live on the edges of deserts are affected as deserts creep outward, a UN spokesman said.

In recognition of this fact, the UN General Assembly in 1974 adopted a resolution calling for concerted international action to combat desertification. It also decided to convene in 1977 a UN Conference on Desertification.

The spokesman said that the Graduate Study Program forms part of the activities aimed at developing a greater understanding of the causes behind desert problems which have so recently deeply affected countries of the Sahel as well as countries in other parts of Africa, Asia, and Latin America.

Participants will explore how desertification can be halted and how land can be reclaimed for human benefit. Those from the developing countries include ecologists, range managers, and agronomists. With the UN scientists, they will study four components of desertification: climate affecting deserts; ecological change; demographic, social, and behavioral aspects; and desert technology.

The meeting here followed a similar seminar that began in Soviet Turkmenia last July, where scientists from five continents discussed how man could use deserts. Irrigation and exploitation of mineral resources were major topics at the symposium in the Turkmenia capital of Ashkhabad on the edge of the Kara Kum Desert. Experts from the Soviet Union, United States, Federal Republic of Germany, Japan, Australia, France, Britain, and African countries took part.

WILLIAM G. MAHONEY



## In Brief . . .

### Chemical Firm in Italy Held Innocent of Sludge Dumping

In a dramatic decision, an appellate court in Livorno, Italy, has cleared executives of the giant chemical firm Montedison of any wrongdoing in the dumping of "red sludge" from a plant into the waters near Corsica.

The case had aroused public opinion and created legal controversy for several years in Italy and France. In 1972, a court in the same city had attacked the company on behalf of fisherman and environmentalists in the area and on the nearby island of Corsica, which had been heavily affected by the dumping of titanium dioxide. Officials of the firm had been sentenced to jail and their sentences suspended in the case. The firm had agreed to end the practice by the end of 1975 but continued nevertheless. Montedison had also benefited from a "temporary" law passed in Parliament legalizing such discharges until the enactment expected late this year of a new law governing such practices.

The appellate court ruled recently that the temporary law protected the company and reversed the earlier condemnations. Opposing forces, however, have indicated they would try new approaches to the problem which has plagued the area for years.

### New Concentrate Effectively Copes With Large Oil Spill

A new dispersant concentrate enabled Great Britain to cope effectively with its largest oil spill since 1970, according to a report issued recently by the British Department of Trade.

A government agency set up in the wake of the Torrey Canyon disaster to supervise oil clean-up was put to the test in November of last year when the tanker Olympic Alliance collided with the Royal Navy frigate

Achilles.

The 2,000 tons of light crude oil spilled in the English Channel threatened the coast at both Dover and Folkestone.

In the four-day clean-up operation, about 55,000 gallons of ordinary chemical dispersant were used along with 2,000 gallons of a new concentrate, which is diluted with sea water on the spot. The concentrate is advantageous because it gives the spraying fleet a ten-fold increase in its capacity.

The oil spill was a serious incident, but not a major disaster. It did, however, the report stated, give Britain an opportunity to confirm that its contingency plans based on the use of dispersants at sea were credible and caused no significant damage when used with proper precautions.

The government will not reveal the total cost of the clean-up operation, which it hopes will be paid by the Panamanian tanker owners. The chemicals used are believed to have cost about \$90,000.

### Unusual De-Inking Process Helps Recycle Newsprint

A newsprint recycling plant using an unusual de-inking process has begun first-stage production near this north-central Mexican state capital of San Luis Potosi. Production for the second half of this year is estimated at 25,000 metric tons with eventual maximum production of the projected two-stage plant set at 110,000 metric tons annually.

Mexico presently imports 200,000 metric tons of newsprint each year—chiefly from Canada, the U.S., and Finland—at a cost of \$40 million to supply the nation's 238 daily publications.

President Luis Echeverria led start-up ceremonies at the \$26,400,000 first-stage of the factory of Productora Nacional de Papel Destintado (National Producer of De-Inked Paper) in the town of Villa de Reyes, 50 kilometers south. Similar plants exist only in the U.S. and Japan, a

spokesman said.

Newspaper recycling is achieved by using a de-inking process on 85 per cent old newspapers and mixing it with 15 per cent new, mechanically-ground pulp. Because the process requires 50,000 gallons of water to recycle one ton of newsprint, a water treatment and recycling plant has been built.

This will provide an added benefit to farmers in the area who will receive water for irrigation of their lands. Second stage of the plant, now under construction, will cost \$26 million. While it is being built, the first stage is scheduled for an eventual annual rate of production of 61,000 metric tons by December.

### Colombia To Fluoridate Water Throughout Entire Country

In an effort to reduce tooth decay, Colombian Health Minister Haroldo Calvo has announced the government's intention to provide water fluoridation for the entire country by the end of 1977. Eight million people in Colombia's 12 largest cities already receive fluoridated water. The new program will extend coverage to Colombia's 50 most important towns and cities.

Calvo cited the city of Manizales in central Colombia, where the country's first fluoridation program was begun in 1959, as proof of the water treatment's success. Today Manizales has the lowest incidence of dental cavities in the entire country.

### Right-Wingers in Australia Fight Conservationists

Right-wing pressure is building up against Australian conservationists, largely in reaction to the bandwagon the Left has made of earlier campaigns. This was most notable in the "green ban" movement by Jack Munday, building workers' union chief and later national Communist Party secretary, who stopped developments on projects that involved demolishing historic buildings, main-



ly in Sydney.

In federal parliament, John Martyr has claimed that the Australian Conservation Foundation (ACF), and particularly its director, Dr. John G. Mosley, was being "encouraged by . . . the same pro-communist crowd who have used the organization's respectability to cover its sabotage of the Newport power station" in Victoria.

Martyr is a member of the Liberal Party (not US-style liberal, but rather resembling a British Conservative). His comments, however, were tempered later in parliament by colleague David Hamer, who said the ACF, "No doubt with the best of motives, is in danger of being led astray." He criticized Martyr's "scathing remarks."

Certainly the strongest comment was made by Western Australia's Liberal Premier Sir Charles Court, who said "a force at work in the Australian community could become a modern form of the 'fifth column'". In the same address he referred to left-winger infiltration of the ACF, and "the campaign to destroy the development of nuclear energy in the free world".

### Trinidad to Resolve Fishing Dispute with Venezuela

Because the Caribbean is being over-fished, Trinidad is attempting to resolve its long-standing dispute with Venezuela in the Gulf of Paria, shared by both nations, a Trinidad fisheries expert said recently.

Julian Kenny, now attending a series of three scientific meetings in Caracas dealing with marine issues, told interviewers that Trinidad is interested in putting an end to illegal fishing in Trinidadian and Venezuelan waters.

Kenny called for a meeting of experts and technicians to resolve the problem. He said that, despite over-fishing in some Caribbean waters which threaten red snapper and sea bass, Trinidad does not presently face such problems. The annual Trinidad catch, Kenny said, is 100,000 tons, nearly all shrimp and kingfish.

### South Korea Begins National Food Purification Drive

The South Korean government has recently launched a food purification drive throughout the country and set up a Harmful Foods Control Headquarters.

This headquarters, based in the Ministry of Health and Social Affairs, was activated last July under a solemn pledge to "eradicate harmful foods once and for all" from the nation's markets. The organization, manned by 640 representatives from seven government ministries or offices commands food sanitation control teams scattered across the country.

Thus far, more than 250 cases of foods considered detrimental to health have been identified by the inspection team and more than 1,000 cases of suspected harmful foods are under examination by the National Health Institute or by provincial health research centers. Confectionary items represented the largest portion, or 30 per cent, of the total of 1,137 kinds of foods picked up by the inspection teams. This was followed by noodles, pickles, dried fish, and edible oils. Makkolle (rice wine) mixed with industrial lactic acid, decayed meat, confectionary remade from decayed material and fish tinted with harmful coloring agents were also cracked down on.

However, it was noted that finding harmful ready-made foods was difficult because unlicensed manufacturers in Seoul delivered products to the provinces and these products were quite similar in appearance to those made by licensed food manufacturers.

### Denmark Orders Reduction Of Soda Pop Coloring

Soda pop in Denmark will be lighter in color henceforth because the government's Foodstuffs Institute has lowered the permissible amount of ammoniated caramel which can be used as coloring. Even American Coca Cola served here will

lose some of its characteristic dark color because the amount of ammoniated caramel permitted will be reduced from four to three grams per liter.

The soft drinks manufacturer's association protested the rule and were given a month's grace to present their case. But they withdrew their complaint after conferring with the Institute.

The Danish ruling was based on the result of a report by a joint expert committee of FAO and WHO. It introduced the concept of "acceptable daily intake" of additives to food and drink.

Using this as a guideline, the Institute concluded that Danes who consume large quantities of pastries, ice cream, and soft drinks were receiving an overly high daily intake of ammoniated caramel—which is largely composed of burnt sugar.

### Brazil Passes Law Banning Non-Degradable Detergents

The Brazilian Congress has recently enacted legislation forbidding the manufacture of non-biodegradable detergents. The law now goes up for presidential ratification, and in this particular case that seems assured.

The biodegradable detergents law comes in the wake of an outburst against rapidly increasing pollution in this country. Among the recent ecological nightmares reported in Brazilian newspapers was the case of rivers in Sao Paulo found covered with a thick layer of dirty and smelly suds, formed by non-degradable detergents released into the sewage system. As greater Sao Paulo has a population of around 10 million, the sewers become supersaturated with the suds and the overflow spilled out into the rivers.

It took a year to pass the law and the only major change from the original proposal was to extend from one to three years the period allowed for the soap factories to make the complete switch to a biodegradable product.



The law was introduced by Deputy Cunha Bueno, who noted that only in places like South America and Africa was the manufacture of non-degradable detergents still allowed.

"It is inevitable," he said, "that Brazil should adopt a new technology in the production of detergents, so that the factories will only come out with degradable products which will not pollute nor cause ecological harm."

### A 'Save Materials' Campaign Works Well in South Korea

Mr. Min Byong-kwon, second minister without portfolio of South Korea, claimed recently that a total of \$816.3 million worth of resources and materials will be saved this year as a result of the ongoing national "save materials" campaign being pushed by the government. During the January to March period, the government has saved a total of \$19.4 million with the various material-saving measures so far undertaken. Private businesses saved some \$71.8 million during this same period.

### Saboteurs Blow Up Woodchip Berth in Western Australia

Violence has punctuated a long debate in Western Australia over the state's woodchipping industry. In an event unprecedented in this region, two masked saboteurs blew up part of the industry's woodchip loading berth at the port of Bunbury, after overpowering and kidnapping a security guard.

Two shiploads of woodchips from the project have gone to Japan, after several years dispute with conservationists. West Australian Chip and Pulp Company is a consortium of the state's main timber companies.

### World Bank Aids Indonesian Transmigration Project

The migration of settlers in Indonesia from the overpopulated areas of Java to other parts of the country is being assisted by the World Bank, which has provided \$30 million for the project. This is the

first time the bank has supported the Indonesian transmigration project.

The plan consists of the establishment of a new 4,500-family settlement, plus the upgrading of an existing 12,000-family settlement and technical support for the design and implementation of future programs.

"Indonesia views transmigration—and the process of moving people from the inner island to the outer islands—as a means of providing the landless and the jobless of the inner islands with land grants. Over a period of time, these will offer them the opportunity of full employment and increased income" the World Bank report said.

"About 87 million or over 67 per cent of Indonesians live on Java, which has less than 7 per cent of the total land area. The problems facing economic development in Indonesia are overpopulated Java, scarcity of fertile land, and low levels of productivity. The Indonesian government wishes to create productive employment for those now unemployed and underemployed", the report added.

## Calendar . . .

**September 1-3**—Working Group on the Long-term Effects of Air Pollution on Respiratory Diseases in Children. Katowice, Poland. European Regional Office of WHO.

**September 12-17**—International Conference on Photochemical Oxidant Pollution and Its Control. Raleigh, N.C. Sponsored by U.S. Environmental Protection Agency (EPA).

**September 15-17**—Water Management Group. Paris. Organization for Economic Cooperation and Development (OECD).

**September 27-October 2**—Environmental Health Aspects of Petroleum Products. Geneva. WHO.

**September 20-24**—First Consultative meeting of the Parties to the London Dumping Convention. London. Intergovernmental Maritime Consultative Organization (IMCO).

**September 21-23**—Special Meeting of the Working Group on Urban Environmental Indicators. Paris. OECD.

**September 25-29**—Workshop on the Water Balance of Europe. Varna, Bulgaria. WMO/UNESCO.

**September 27-October 1**—International Trade Fair on Waste Handling. Waste Recovery and Industrial Cleaning (AVFALL). Jonkoping, Sweden. ELMIA Exhibition/Conference Center.

**September 27-October 1**—Symposium on Wider Use of Wood Residues. Bucharest. ECE Timber Committee.

**September 27-October 1**—Committee on Water Problems. Geneva. ECE.

**October 3-8**—North American Regional Seminar on Environmental Education. St. Louis, Mo. Conducted by the Alliance for Environmental Education in cooperation with UN Environment Programme (UNEP) and UNESCO.

**October 4-8**—Symposium on the Water Balance of Europe. Varna, Bulgaria. UNESCO.

**October 4-13**—Sixth Statutory Meeting of the International Council for the Exploration of the Sea. Copenhagen. Auspices of ICES.

**October 11-15**—Technical Conference on Air Pollution Measurement Techniques. Gothenburg, Sweden. WHO.

**October 17-22**—8th International Conference of the International Association of Water Pollution Research. Sydney, Australia.

**October 25-29**—European Committee for the Conservation of Nature and Natural Resources. Strasbourg. Under the auspices of the Council of Europe.

**November 1-5**—Seminar on Air Pollution Problems from the inorganic chemical industry. Geneva. ECE.





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## Environmental Impact on Health Given a Top Priority at WHO

*GENEVA*—The World Health Organization (WHO) has decided to include the environmental impact on health among its top priority concerns. Within this broad context, the program will concentrate on basic sanitary measures, particularly safe water supply and the disposal of excreta.

In 1975, WHO reported, more than 57 per cent of a total of \$20.5 million allocated to its environmental health program was spent on activities aimed at providing basic sanitary measures and services.

The reason for this emphasis, WHO said, is clear. Some of the leading causes of death and morbidity in the developing world are water-borne diseases such as cholera, typhoid fever, diarrhea, dysenteries, and intestinal worm infection.

"It has been estimated," the WHO report said, "that the burden of sickness in the world could be immediately cut down by 80 per cent if it were possible to supply safe water to people everywhere. . . . The grim fact is that more than 1,200 million people of the developing countries have no safe water supply and more than 1,400 million no sanitary waste disposal facilities.

"The lack of basic environmental health facilities for over one third of mankind and the resulting cost in terms of sickness, deaths, and thwarted economic growth cannot be ignored in any effort to promote development and raise the quality of life."

The report said that the goals set for the conclusion of this decade were modest: 60 per cent of the urban population to have house water connections, 40 per cent to have access to standpipes, and 25 per cent of the rural population to have safe water.

The total global investment in the proposed targets for community water supplies in the next four years is estimated at \$21 billion—an approximate annual investment per head of \$1.81, using the estimated 1980 population of the developing countries as the base. The estimated global investment in excreta disposal projects is \$14.5 billion or \$1.21 per head. If successful, the community water supply program will directly benefit 479 million people and the waste disposal program 432 million.

Currently, WHO and the UN Development Program (UNDP) are collaborating in more than a dozen pollution control projects in Europe, Latin America, and parts of Asia. Activities are mainly concerned with control of

air, water, and soil pollution, and in some cases, as in Greece, with noise abatement. In Poland, support is being given to a pollution control center in the highly industrialized zone of northern Silesia, which serves as a research facility, reference laboratory, and training center. A large-scale collaborative project on pollution monitoring and research in the Mediterranean, involving all the coastal countries and several international organizations, was initiated by the UN Environment Programme (UNEP) last year. WHO is the executing agency for part of this project.

Since food, like water, sometimes becomes a medium for harmful organisms or chemicals, food hygiene and safety have an important place in WHO's environmental sanitation program. Primarily, the work lies in developing microbiological specifications for foods and acceptable tolerance levels for substances that may be intentionally or unintentionally added to food. Much of this work is carried out in collaboration with the Food and Agricultural Organization (FAO).

WILLIAM G. MAHONEY

## Socio-Eco Impact on Environment Assessed by NATO in Istanbul

*ISTANBUL*—Various environmental problems in Western Europe and North America were discussed here recently at a six-day, NATO Conference on Environmental Assessment of Socio-Economic Systems.

Nearly 100 experts from a dozen Western countries presented papers on such questions as urban growth, economic and environmental assessment of water management systems, long-term policy assessment of energy environment systems, traffic environment, assessment of

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alternative energy, public housing, and environmental pollution.

In a detailed presentation of Turkey's environmental problems, Kemal Gulec, deputy director of the Science and Technology Department of the Ministry of Industry and Technology, disclosed that 43 per cent of all industrial enterprises in Istanbul are polluting the city's environment. The figures elsewhere were significantly lower: Ankara (4.1 per cent), Izmir (5.2 per cent), Izmit (6.2 per cent) and Bursa (5.2 per cent). For Turkey as a whole, 16.6 per cent of industrial plants are definitely causing environmental pollution.

Broken down by industry category, these pollution problems are mainly caused by the heavy manufacturing industries (95 per cent), followed by intermediate goods (60 per cent), mining (4 per cent), and energy (2 per cent). The wastes causing pollution are 31.9 per cent solid, 42.6 per cent liquid, and 25.4 per cent gas.

According to Gulec, environmental problems in Turkey stem mainly from industrialization and urbanization, as in many other developing nations. The region between Istanbul and Izmit, he said, is particularly polluted by liquid, solid, and gas compounds. Other adverse factors include inadequate sewage systems, use of low quality fuel, an increase in the number of motor vehicles, and inadequate garbage collection.

SAM COHEN

## Antarctic Research Group Says Area Can Provide Much of Mankind's Food

**BUENOS AIRES**—The Antarctic can provide much of mankind's food needs if its resources are "properly studied and protected," George A. Knox, secretary of the Scientific Committee on Antarctic Research (SCAR) told the organization's 14th meeting held in Mendoza in late October. SCAR is a non-governmental organization composed of delegations from the 12 nations that signed the 1959 Antarctic Treaty providing for scientific and technical cooperation. Its jurisdiction covers some 19 million square miles of land mass and adjacent waters.

Although agreeing with Knox's general assessment, George E. Hemmen, SCAR permanent executive secretary, cautioned that "before initiating massive exploitation, the most profound investigations of the entire ecosystem of the Antarctic waters should be made."

Besides containing relatively untapped fishing resources such as the krill (tiny, high-protein shellfish), the Antarctic probably is rich in minerals. Natural gas has already been discovered in the Ross Sea, and "It is reasonable to presume that hydro-carbons exist in the region," Hemmen said.

In the past, SCAR has been effective in protecting the Antarctic against contamination. It has, for instance, joined other international scientific organizations to oppose plans discussed in the U.S. to deposit nuclear wastes in the region.

AGOSTINO BONO

## New Program in Tokyo Generates Commercial Power from Garbage

**TOKYO**—Environmental groups in Japan are paying close attention to an experimental program now underway in this capital which could greatly lessen the threat arising from rapidly accumulating garbage and trash.

Tokyo's metropolitan government recently contracted to sell to the Tokyo Electric Power Company—a private concern—the excess power generated at seven of the city's nine garbage and trash incineration plants. City engineers estimate that the surplus power will amount to roughly 10.5 million kilowatt hours annually.

This is the first instance in Japanese history in which a city government will supply self-generated electricity to a power firm for commercial distribution.

Until recently, most of Tokyo's municipal incinerators have used their supplies of thermal energy only to heat water for adjoining or nearby welfare facilities. Often these incinerators were built along with the welfare facilities themselves as one of the conditions necessary to win public approval for plant construction in that particular neighborhood.

Now, however, these seven incinerators have been equipped with steam turbine generators to produce electric power with an estimated capacity of 63 million kilowatt hours annually.

Meanwhile, in another development involving power, Japan's Ministry of International Trade and Industry (MITI) has produced a solar simulator system which is considered indispensable for the successful conclusion of the country's solar energy project. The simulator was developed by the Industrial Science and Technology Agency, an organ of MITI.

A. E. CULLISON

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## Special Report: Third World Urged To Use Irradiated Food

**RIO DE JANEIRO**—During the 20th General Conference of the International Atomic Energy Agency (IAEA), held here recently, nuclear scientists from many parts of the world held a special session to discuss which aspects of nuclear technology were applicable to the production of food.

The session opened with a retrospective look at pioneering work in nuclear science. Dr. Maurice I. Fried, director of the Joint Food and Agriculture Organization and the Division of Atomic Energy in Food and Agriculture, said that the discovery of X-rays by Roentgen in 1895 began a new stage in science. By 1908, there were indications that X-rays could bring about genetic changes, and in 1927, H. J. Muller demonstrated with a fruit fly that artificial mutation in insects was possible. The next year L. J. Stadler used X-rays to produce mutations in barley and maize. These scientists followed the school of "interaction of ionizing radiation with matter."

Another school had used radioactive isotopes as tracers in studies of chemical and biological pathways. A pioneer in this field was G. V. Hevesy, who worked for ten years until, in 1923, he succeeded in using a lead isotope to trace the intake of lead by roots of plants. This early experiment led to the widespread use and study of radioisotopes in the agro-sciences.

Some of the other landmarks mentioned by Dr. Fried included: 1937—the sterilization of insects theory; and 1947—the preservation of food by ionizing sterilization.

He urged developing countries to use atomic energy for food and agriculture programs and said the isotope and radiation techniques are neither too sophisticated nor esoteric to solve practical problems in the developing world.

Speaking for and to the Third World, India's Dr. K. Sundaram, of the Bhabha Atomic Research Center, urged the developing countries to take the lead in food irradiation. He said that irradiation doesn't require as much investment of capital and energy as freezing and refrigeration, which is widely used in developed countries because they have no real food shortages. He claimed a large number of irradiation studies had shown that food irradiation can be accepted with much more confidence than most of the conventionally practiced food preservation processes.

The director of the International Food Irradiation Project in West Germany, Dr. P. S. Elias, maintained that food irradiation is basically no different from other food preservation processes involving the use of energy, but because irradiation is not a traditional preservation method, assurances of safety must be provided through an evaluation based largely on animal experiments. Thus far, evaluations have been made on such foods as mangos, spices, fish, rice, and wheat.

The use of nuclear power in animal production and health was stressed by Dr. Johannes Moustgaard of the Danish Royal Veterinary and Agricultural University.

He said nuclear technology has done more to further man's knowledge of animal physiology and nutritional habits than anything else in our lifetime. The use of minerals and urea in animal feed is a direct result of application of radioactive isotopes. This nuclear based research has helped explain the causes of various digestive and metabolic diseases. Nuclear techniques, he pointed out, have also been used against infectious diseases, especially in the production of radiation-attenuated vaccines, and in animal pregnancy tests to combat infertility.

Reflecting his country's concern with environmental contamination, American professor of Entomology, John E. Casida, of the University of California, said that in evaluating the long term consequences of insecticides such as DDT, it is essential to know "the chemical and physical fate of the contaminants in the multiple components of the environment, an area of research admirably suited for isotopic tracers." He said that a pesticide which has been labelled can be traced in a contaminant with great accuracy and "usually by the use of non-destructive analytical or remote detection techniques. Radio-carbon is the tracer of choice for most environmental contamination research."

In the closing presentation, Prof. Admar Cervellini, of the Agricultural College of the University of Sao Paulo, spoke of Brazilian endeavors in nuclear agriculture and said these have already resulted in the production of beans, wheat, and rice mutants which are highly resistant and adaptable to his country's environment. He said that isotope nutrition research began in Brazil in 1954 and since then has been greatly expanded.

GEORGE HAWRYLYSHYN

## Economic Squeeze, Environmental Pressure Kill Irish Motorway Plan

**DUBLIN**—Irish plans to spend more than \$300 million on motorways have been abandoned by the Government because of the country's economic squeeze and severe pressure from environmental groups.

Plans had been set for a 20-year program to add 70 miles of motorways throughout the country; a major traffic improvement program in the country's second largest city—Cork—where there had been intense pressure against circular roads which were affecting existing residential areas; and a new easterly crossing over the Riffey Liffey in Dublin plus an underground rail system in that city.

In Dublin, community groups had combined to oppose motorway plans which threatened houses, schools, and churches, although political parties remained split over the issue. Now it appears that a large portion of Sandymount Strand, a popular resort near the city, and part of the famous old Royal Canal and business



premises in inner and outer Dublin have been reprieved.

The Irish Minister for Local Government, James Tully, stated that "People in Dublin are complaining, but they have no need for complaint. Houses and schools and churches will not be demolished to make room for these roads. As I see it, there is little chance for such fears before the end of the century." TOM MACSWEENEY

## New System for Cooling Power Plant Water Also Boosts Soil Productivity

*BONN*—The Federal Republic of Germany, four of the country's leading industrial corporations, and three agricultural organizations are collaborating on a new project aimed at doing away with the use of river water and cooling towers to lower the temperature of water in the condensation cycle of large power plants. In place of these traditional methods, a system called Agrotherm pumps the cooling water through a network of pipes laid beneath agricultural ground and returns it to the power plant without waste. The heat the water loses is imparted to the ground to give a spectacular boost to soil productivity.

Two factors pointed up the need for the new system. First, there are not enough large rivers in Germany to provide the coolant required for the planned construction over the next 10 years of between 25 and 30 nuclear plants of the 1,300 MW class, plus a number of smaller conventional ones.

Second, although cooling towers are capable of doing the job, they are expensive to build and wasteful of energy. Since the cooling capacity of a tower varies widely with atmospheric conditions, it is necessary to increase the capacity of a nominal 1,300 MW plant to 1,500 MW in order to maintain the rated capacity during unfavorable cooling weather. This, with the cost of the tower itself, can increase the price of the plant from \$730 to \$900 million. In addition, the waste in primary energy is equivalent to 1.48 million tons of oil a year.

The results of the project's first farming season have been spectacular. Potato production was increased by about 90 per cent and that of sugar beets by 70 per cent. Wheat, corn, other vegetables, and grass all showed gains of between 30 and 90 per cent. In all cases, the quality as well as the size of the crop was improved.

Even such crops as soybeans and peanuts, which will not grow in Germany under natural conditions, were raised successfully in heated ground. In the case of soybeans, the yield per acre was roughly twice as high as in the United States.

A total of about 40 acres of crop land in four separate locations was involved in the project. Each crop under observation was raised in both heated and unheated ground; the growth of each was carefully monitored, along with the weather, atmospheric conditions, ground temperature, hours of sunlight, and other relevant data.

This produced about 2,600 bits of data per day,

which will now be analyzed by Besserschmidt-Bolkow-Blohm, the Munich aeronautical and aerospace firm, before it extends the method to a 12,000-acre tract. Among other factors to be determined in this new stage are: the ideal depth and spacing of the pipe (now 39 inches and 30 inches, respectively), the ideal pipe diameter, and the effects of sub-surface irrigation.

The direction of the Agrotherm project is under August Thyssen Hutte firm. Two power companies, RWE Energietechnik GmbH and Preussag, are owners of the power plants involved, while the Federal Government has provided \$4.5 million in financial support.

J. M. BRADLEY

## Ireland Joins EEC in Formation Of Waste Management Committee

*DUBLIN*—The Irish Government has joined with the European Economic Community (EEC) in setting up a Committee on Waste Management, consisting of top-level national experts to work alongside EEC experts in formulating and implementing an anti-wastage policy.

Although the main emphasis will be on the recycling and the re-use of water, the campaign will undertake to protect the environment generally against unsightly or potentially dangerous waste and to encourage the recovery of resources to help reduce the Community's dependence on raw material producers in non-member countries.

The first of these joint programs, the re-cycling of cars, has already begun. Each county in Ireland is being provided with installations where old cars and wrecks can be legally dumped and to which the commercial operator can bring a mobile crusher. A Government spokesman said such car dumps are beginning to solve the problem of abandoned and unsightly wrecks.

In Brussels, the EEC has released figures showing that in one year, the nine countries of the Community have thrown away 1,500 million tons of waste, including 90 million tons of agricultural waste, 200 million of sewage sludge, and 150 million of waste from the extractive industries. This figure is increasing at the rate of five per cent per year.

Local environmental authorities throughout the Irish Republic have experienced increasing difficulties in dealing with such waste items as non-returnable bottles and food containers. Increased consumer annoyance with the cost of such items and the difficulties of disposal have also been reported.

An Irish Government spokesman said it was planned to make manufacturers more aware of the problem of waste in production by involving consumers in anti-wastage campaigns. In addition, The Commission of the EEC is planning to set up an independent body which would be responsible for issuing special environment labels for products meeting certain anti-wastage or anti-pollution standards.

TOM MACSWEENEY



## India: American Herpetologist Pleads For Snake Preservation

**MADRAS, India**—"Serpents are the most maligned and misunderstood creatures in the world and their indiscriminate killing has created an enormous ecological imbalance in many parts of the world." The speaker is Romulus Whitakar, 33 year-old, world-renowned herpetologist from New York State who manages a snake farm in Madras and crusades throughout India to undo the damage caused by the slaughter of snakes.

To take one example, India, the second most populous country in the world, with 610 million people, has more than four billion rodents—a ratio of seven rats to every Indian—that multiply at the rate of 20 per female rat and that are the worst hoarders of foodgrains, an estimated 26 million tons a year.

Whitakar told *World Environment Report* that he cannot comprehend the extent of ignorance and fear in a country of snake-charmers where one of the major Hindu Gods, Lord Shiva, wears snakes as garlands. There is also a famous snake festival—Naga Panchami—in India at which snakes are fed by thousands of devotees. "It is sheer ignorance and fear," he said, "and I am touring India to remove them."

"I guess snakes are in my blood—call it genetic coding," he says. As a boy in Hoosick, New York, "I carried snakes in my pockets and always had one inside my shirt."

He came to India in 1951 to study at Kodaikanal and caught his first python when he was 12. After graduation he returned to the U.S. to try college for a year. But he lost interest when he found that the zoology department of Wyoming University did not share his passion for snakes. In 1962, he joined the staff of the Miami serpentarium in Florida. His boss was William Haast, the famous herpetologist who has survived more than 100 bites from poisonous snakes, Whitakar says: "He was like a God to me and I developed my professional interest under him."

Whitakar returned to India in 1969 and set up his snake park, the only one of its kind in India, in a village 15 miles from Madras city. It is an unpretentious group of wells, shielded from the sun by thatched roofs. The nine deep pits, which contain 300 snakes of 25 varieties, are studded with miniature trees, pools of water, shaded ledges, rocks, and grass.

World-wide, there are 2,500 species of snakes and many of them are being obliterated. In India, there are over 250 species and there is a need to photograph and catalogue them before they are extinguished. Only 50 of them are poisonous and of these only four are really dangerous: the Saw Scaled viper, the Russel's Viper, the Cobra, and the Krait. The remaining 200 varieties are only rat-killers which help the farmer keep down the rodent menace.

Most people die of snake bite out of fear, Whitakar claims. All snake bites can be cured if immediately treated. Although India makes plenty of anti-snake bite serum, it is not evenly distributed where it is most

needed—in the villages. Moreover, the serum is expensive—\$200 for .035 ounces—and to get that amount takes extraction from four Cobras or 30 Kraits.

Whitakar is now touring India telling farmers not to kill a good friend like the serpent. He takes snakes to schools to show how good and clean they are, and, he says, many students have started rearing pythons.

"If people walk carefully and carry a lantern, the death toll will be minimal in India," he says. At present it is between 5,000 and 6,000 a year. In Australia, where there is a large snake population, the human death toll is only three or four a year, he points out.

"I feel safer in a snake park than walking down the road," Whitakar says, and he shortly plans to carry this message on a tour of the U.S., Canada, and South America.

R. SATAKOPAN

## Kenya to Construct 26-Mile-Long Reservoir and Dam on Tana River

**NAIROBI**—Kenya's longest river, the Tana, is the subject of the most comprehensive environmental study ever planned for a single area in East Africa. The 750-mile river rises high up on 17,000-ft. Mount Kenya, and eventually runs into the Indian Ocean on Kenya's eastern coast. The UN Environment Programme (UNEP) will participate in this environmental impact study of the projected new 26-mile-long reservoir to be built on the Tana river.

The new reservoir will require the building of a dam, and special attention will be paid in the environmental study to the areas expected to be wholly or partly inundated by 1980. Questions to be studied range from the new lake's tourism potential to the prospects for commercial fishing.

Apart from increasing Kenya's potential for hydroelectric generation, the new reservoir will make it possible to hold back the floodwaters of the river for use during subsequent dry seasons. There are also plans to utilize the new water supplies for major irrigation projects, producing both food and other crops such as cotton.

A wealth of data on the river, much of it unavailable in the past, has been secured by a party of 30 British and Kenyan scientists, who recently completed the first full navigation of the river, using inflatable canoes to travel over sections that had never been navigated before.

The expedition, sponsored by the Polytechnic of Central London, and a number of British and Kenyan companies, carried out studies of land use, water flow, climate, disease, soil erosion, and population shifts. They also compiled detailed data on the natural flora and fauna of the region, which will enable precise comparisons to be made when plans for new settlements, irrigation, and other projects take effect.

CHARLES HARRISON



## In Brief...

### Fluidized Bed Combustion Of Coal Investigated in Britain

Announcing the start of a seven-year experimental facility to investigate the fluidized bed combustion of coal, Sir Derek Ezra, chairman of the National Coal Board, said in London recently that he thought it could become "one of the most significant engineering advances of the 20th century."

The project, one of five currently being undertaken in Britain through the International Energy Agency Coal Working Group, will take three years to build and four years to research. The cost of \$23 million will be shared by its three sponsors, the United States, the United Kingdom, and the Federal Republic of Germany.

By building a flexible facility, the planners hope to learn more about combustion, heat transfer, gas clean-up, corrosion and energy recovery in pressurized fluidized bed combustion systems. Nine separate specifications have been prepared by the project management team for its construction. These are: turbo-compressor and immediate ancillary plant; combustor and primary cyclones; exhaust gas system; fuel storage and handling plant; pipework, pumps, and miscellaneous ancillary equipment; electric; instruments and controls; civil works such as foundations and steelwork; and chimney. Invitations to tender have been issued for some of these.

### Argentina Claims Development Of Virus-Free Potato Seed

Argentine agronomists claim they have developed a virus-free potato seed which could save the country about \$40 million a year in seed imports.

Agronomists Eduardo V. Viirsoo and Eduardo Rojas, of the Tafi del Valle Agricultural Experimental

Station, say they have developed a White Rose potato variety which is practically virus free into its fifth generation. They say much of their success is due to the soil, which is free of many virus-carrying insects.

The experimental station is located in the interior province of Tucuman, although traditionally the White Rose potato is grown along the Atlantic coastal region of the Buenos Aires province.

Within 10 years after employing imported, virus-free seeds, potato crops in Buenos Aires province became contaminated. Viirsoo and Rojas started their experiments with coastal potatoes that were originally 20 per cent contaminated. They hope that by developing the seed and encouraging production in the Tafi del Valle region, Argentina can become self-sufficient in potatoes within six years.

### WWF Opens Nominations For Prestigious Getty Prize

The World Wildlife Fund (WWF) has announced in Geneva that nominations have now been opened for the J. Paul Getty Wildlife Conservation Prize of \$50,000.

The prize was established in 1974. Nominations should be accompanied by a full description of the candidate's achievements. Forms are available from World Wildlife Fund-U.S., 1319 18th Street, N.W., Washington, D.C. 20036, where all nominations should be submitted.

Dr. Thomas E. Lovejoy, Program Director of World Wildlife Fund-U.S., is coordinator for the Award Jury. He will examine the claims, secure any necessary additional information and submit this to the jury. Candidates will be considered for a diversity of accomplishments, including the conservation of rare or endangered species and habitats, the increase of public awareness of the importance of wildlife and nature by scientific, educational or aesthetic contributions, or in the establishment of legislation, or of an organi-

zation or society of unusual importance to wildlife conservation. In all cases, the WWF stated, the achievement must be pioneering and substantial so that the recognition accorded by the award of the Getty Prize will increase public appreciation of the significance of wildlife and its conservation.

The Award Jury is composed of: Felipe Benavides, President of WWF-Peru; Prof. Jean Dorst, Musee National d'Histoire Naturelle, Paris; Robert G. Golet, President, American Museum of Natural History; Dr. Bernhard Grzimek, President Emeritus, Zoological Society of 1958, Frankfurt; Francis L. Kellogg, President WWF-U.S.; Prof. Donald J. Kuenen, President, International Union for Conservation of Nature and Natural Resources; Dr. Anne LaBastille, ecologist, author and honorary consultant to WWF; Prof. Konrad Lorenz, Director, Max Planck Institut, 1973 Nobel Laureate; Prof. S. Dillon Ripley, Secretary, Smithsonian Institution and Chairman of WWF-U.S.; Sir Peter Scott, Chairman, WWF International; Maurice Strong, former Executive Director, UN Environment Programme, and Russell E. Train, Administrator, U.S. Environmental Protection Agency.

### Species of Philippine Eagle Threatened With Extinction

The Philippines monkey eating eagle — *pithophaga jefferyi* — is threatened with extinction. That is the conclusion of an American Peace Corp volunteer, Vaughn Rundquist, who has just finished a two-year study of the species. He believes that there are 57 pairs of the eagles in the Philippines, most of them in the southern island of Mindanao. But in another five or ten years they might disappear entirely, mainly due to continuous deforestation of the area by logging operations. The bird, which has only been a protected species since 1972, has a ten-foot wingspan and stands more than three feet high.



### Device on Hong Kong's Taxis Cuts Fuel Use and Pollution

A special anti-polluting and fuel saving device will be fitted to some of Hong Kong's taxis in the near future. Claims are that the device, developed in the Philippines, reduces petrol costs by as much as 25 per cent and diesel costs by 10 per cent. Its developers also claim that it significantly reduces pollution and prolongs engine life. The device works by injecting measured amounts of water vapor into the engine's combustion chamber, thereby increasing efficiency and lessening fuel consumption.

### Pakistan Checks Soil Damage With Infra-Red Photography

The West Pakistan Water and Power Development Authority (WAPDA) will soon undertake large-scale infra-red photography to determine the extent of damage caused by waterlogging and salinity to agricultural land. WAPDA has awarded an \$840,000 contract to the Institute Geographique National of France to make an aerial photographic survey of the entire irrigated areas of the Indus Basin.

This photographic survey is only part of the 21-year, long-term master plan prepared by WAPDA to eradicate the twin menace of waterlogging and salinity that is eating up nearly 100,000 acres of fertile land every year.

### River Pollution in Colombia At Root of Skin Infection

Pollution of Colombia's Magdalena River has caused a skin infection epidemic at the petroleum port of Barrancabermeja. Hundreds of cases of skin eruptions, originally thought to be allergies, have been treated at local hospitals in recent weeks.

Colombian doctors are divided over the cause of the illness. Some attribute it to an excess of chemicals in the city's water treatment plant. However, recent studies by the

Columbian wildlife service Inderena and the UN's Food and Agriculture Organization suggest the epidemic results from eating polluted fish from the Magdalena River. Laboratory studies begun last May show that many of the fish contain chemical-induced parasites.

Thousands of Magdalena River fish are periodically poisoned by the waters of the nearby El Llanito Swamp, which feeds chemical pollutants from Barrancabermeja industries into the river.

### France's Anti-Nuclear Lobby Wins Psychological Victory

France's anti-nuclear lobby won an important psychological victory in Grenoble late last month when representatives of the Conseil General of the Department of the Isere voted for the suspension of France's fast-breeder program. By 19 votes to 15, with 10 abstentions, this local body called for the suspension of the construction of the 1,200 megawatt Super-Pheonix fast-breeder reactor which is being built at Creys-Malville within the Isere department. (*WER*, Sept. 13, p. 3.)

The representatives called for a suspension of all work on the reactor until a special committee of enquiry had examined the security dangers posed by such a plant, a full parliamentary debate had been held on the subject, and a permanent security committee had been set up in the region allowing local representatives to be informed about any potential hazards.

The vote, however, is unlikely to have much effect on the decision taken by the French government last April to push ahead with building the plant. The Conseil General has no powers except over the departmental budget and cannot, therefore, prevent a project which is being financed by French, Italian, and German electrical utilities. Its resolutions have no more than moral effect.

The government for its part has no intention of backing down from its decision, for it feels that a full

discussion has already been held in Parliament. But coming only a few days after a British Royal Commission's reservations over the wisdom of pushing ahead too quickly with a fast-breeder program in Britain, the resolution shows that French opposition to fast-breeder technology is also developing.

Only ten days ago, anti-nuclear demonstrators occupied the prefecture of the Isere in Grenoble and stole confidential documents which describe safety measures to be taken in the event of a nuclear accident. The plans have since been passed along to the French newspapers. The following day, demonstrations against the Super-Pheonix were held in half-a-dozen towns in the region.

### Shortage of Sports-Playing Fields Found in Mexico City

For every square meter of sports-playing field created by Mexico City authorities, 36 square meters are consigned to vehicle traffic, the director of Sports and Recreational Hygiene Program of the Secretary of Health, Dr. Ismael Zurita, has calculated. The "cult of the automobile" has changed old neighborhood play areas into parking lots, he said, and the city has not kept pace with the recreational needs of its estimated 12 million inhabitants.

International urban planners recommend that there be nine square meters of urban "green land" for each resident, Dr. Zurita pointed out, but Mexico City's ratio is only 2.38 square meters per resident. In Mexico City's 16 political-geographical subdivisions, there are but 17 city-built playing fields, a number that is far too low, he said.

### Noiseless Trash Collection System Set Up in Bonn

To the members of roughly a million households in the Bonn suburb of Tannenbusch, the noisy trash man has become nothing more



than an unpleasant memory.

In his place the city has installed a seven-mile-long trash collecting system, made up of a network of 20-inch diameter pipe, laid underground, into which the residents insert their household trash at conveniently located deposit points. From them, the trash is drawn by suction to a central point where it is compressed to one-third of its original volume and thence transported to the central city dump.

The system, built over a period of 18 months at a cost of about \$3.5 million, went into full operation in June of this year. It is now being analyzed by city engineers to determine whether it should be expanded to take care of the trash traffic of the rest of the city.

### CO<sub>2</sub> Level in Budapest Found Dangerously High

The Executive Committee of the Budapest City Council has ordered a crackdown on air pollution because, Radio Budapest announced last month, the Committee found that

carbon dioxide in the capital's air was three times the accepted toleration level.

Under the new regulations, air pollution in the inner city that is caused by heating must be eliminated by October, 1985. Outlying sectors of the city have been given to October, 1999 to convert to fuel containing less than one per cent sulphur. The report said that tenants of state-owned apartments will be given financial incentives, in the form of inexpensive loans, to convert to gas heating.

### UNEP to Improve Cyclone Monitoring in Bay of Bengal

The United Nations Environment Programme is contributing \$74,000 (out of \$163,000) to prepare programs for the six countries of the Bay of Bengal and the Arabian Sea to improve the existing cyclone monitoring and warning systems there. This is part of the World Meteorological Organization's tropical cyclone project. The six countries are Bangladesh, Burma, India, Pakistan,

Sri Lanka, and Thailand.

With WMO, UNEP participates in a similar regional project for Central America. UNEP also supports the U.N. Disaster Relief Office (UNDRO) in its preparation of a world survey of disaster damage, and of the study of disaster prevention and mitigation.

### Sweden's PM Abandons Vow To Halt Nuclear Construction

In a dramatic turnabout, Sweden's new Prime Minister, Thorbjorn Fall-din, abandoned his earlier campaign promise to halt construction of new nuclear power plants, and instead delivered a policy speech to Parliament on October 8th withdrawing his opposition to allowing a new reactor in southern Sweden to begin operation next year (*WER*, Oct. 11, p. 6). His change of attitude apparently stemmed from the opposition of his coalition partners, who support nuclear energy.

## Calendar...

**November 9-11**—Fifth International Pollution Engineering Congress. Anaheim, California. Contact: Clapp & Poliak, Inc., New York City.

**November 14-19**—International Symposium on Industrial Wastes and Environment. Caracas. Auspices of International Association of Medicine and Biology of Environment.

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise. Geneva, WHO.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.

**December 13-17**—Working Party on Housing (6th Session). Geneva. ECE.

**December 16-18**—Inter-Governmental Consultative Committee on Environmental Problems of Specific Industries. Paris. United Nations Environment Programme.

**December 20-23**—International Conference on Bicycle/Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.

**January 11-14**—Seventh Session of the Working Party on Air Pollution Problems. Geneva. UN Economic Commission for Europe (ECE).

**January 1-18**—UNEP/FAO joint Seminar on Residue Utilization: Management of Agricultural and Agro-Industrial Wastes. Rome.

**January 31-February 2**—First International Cadmium Conference. San Francisco. Sponsored by The Cadmium Council, The International Lead Zinc Research Organization, The Cadmium Association of London.

**February 21-25**—Fifth Session of Senior Advisors to ECE Governments on Environmental Problems. Geneva. ECE.

**March 28-30**—The Fourth International Health Conference. Washington, D.C. Sponsored by the National Council for International Health.

**March 29-April 1**—Seminar on the Petroleum Industry and the Environment. Paris. UNEP.





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## Australia Moves Ahead With Plans To Export Rich Uranium Deposits

*PERTH, Western Australia*—Against strong opposition from conservationists, this country intends to develop and export rich uranium deposits. But the exhaustive report recommending this action leaves many questions unanswered and the debate, far from being ended, can be expected to intensify.

Both sides feel they have gained ground from the findings of a commission headed by Justice Fox, set up in mid-1975 initially to report on the environmental aspects of the Ranger uranium deposit at Jabiru in the Northern Territory. But its brief widened to define Australia's role in the global nuclear energy industry. With about one-fifth the known reserves, it was argued that Australia should exercise a moral judgement, setting aside the economic benefits of uranium sales to make the point that going nuclear was unjustifiable.

The federal government, anxious to give the industry guidelines and leaning towards the miners' view, has had to wait on the findings of the Fox Report. However, its publication—headlined on front-pages across the country—has pinpointed the need for exacting safeguards many feel cannot be met.

Although the commission has found that the hazards of mining and milling, properly controlled, were not sufficient to keep the uranium locked in the ground, it nevertheless calls for strict controls on mining, great care in selecting markets, and regular reviews of policy. In particular, the commission asked that no mining be undertaken in the Northern Territory until it produces its second report; and it is there, along the Alligator River among sacred Aboriginal lands and areas earmarked for national reserves, that the biggest and richest deposits await development.

In this hard-fought controversy, a strange alliance is taking shape. Left-wing unions, conservationists, even Westinghouse, which has claimed Australian concerns have acted collusively to boost uranium prices making it impossible for the company to honor package contracts for nuclear plants with cheap uranium—all oppose Northern Territory uranium mining interests.

Thus, the Alligator River becomes the new battle line. As Dr. J. Camilleri, Melbourne convenor of the Movement Against Uranium Mining puts it: "One of the more pleasing aspects of the report is the commissioners' recognition that ultimately the whole issue must be

decided by the public. This is going to be a prolonged and tough debate."

Meanwhile, Australia's only operating uranium mine, Mary Kathleen Uranium Ltd., has reported that Westinghouse Electric Corp. has started proceedings in the U.S. District Court for the Northern District of Illinois against the company (and 28 other companies in the U.S., Canada, Britain, Australia, and South Africa), alleging that the defendants have combined and conspired to restrain both the interstate and foreign commerce of the U.S. in uranium, and, in doing so, have caused injury to Westinghouse.

DON LIPSCOMBE

## UNEP Delays Final Report On Its Paris-Held Motor Vehicle Seminar

*PARIS*—Although the UN Environment Programme's three-day seminar on the motor vehicle industry closed here on October 7 (*WER*, Oct. 25, p. 3), no final report has yet been issued.

The reason for the delay, *WER* has learned, was the significant amount of divergence amongst the various delegations—governmental, industry, and labor—over the general content and precise wording that the final report should contain. So much so, that each participant has been given an extension to December 8 to review the draft document, and to add comments or record their objections to various data.

This was the third UNEP-sponsored Office of Industry seminar in a continuing series. Previously held sessions were on pulp and paper, and on aluminum. The fourth in the series, to be held next year, will be on petroleum.

SPECIAL DISPATCH TO *WER*

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## Beer Industry in Bavaria Praised For Its Environmental Efforts

**MUNICH**—Bavarian State Secretary for the Environment Alfred Dick told members of the Bavarian Brewers Association at Neu Traubling last month that a clean environment was vital to good beer, and that obviously it was in the brewers' interest to support environmental protection efforts. The brewing trade, Dick said, needs environments where clean water still exists.

Dick pointed out that brewing provided an excellent example for other industries that are beginning to explore recycling possibilities. Brewing recycling, he said, guarantees the economic use of natural resources: its refuse provides food for man and beast. The State Secretary noted that the daily prices of malt-and-hops refuse are quoted on the market and that, because of its high protein content, has become valuable agricultural fodder.

Dick also praised the brewers for their plans to begin using uniform returnable bottles to the greatest extent possible, particularly in the face of growing worldwide shifts to throw-away bottles and cans. He further noted that when throw-away bottles were introduced to the German market, only 39.5 million gallons of beer were sold that year in "one-way" containers, in comparison to 1.5 billion gallons sold in the deposit-type, returnable bottles.

The State Secretary also praised the emphasis placed upon environment in the state's two training institutions of professional brew-masters—the University of Munich and of Weihenstephan. Both institutions have now included courses in environmental protection and at present about 500 future brew-masters are taking such training.

WILLIAM G. MAHONEY

## Antarctic's Potential Fish Catch Could Equal Present World Total

**BUENOS AIRES**—The Antarctic is potentially rich in mineral and fishing resources, but exploitation is a long way off, said George E. Hemmen, executive secretary of the Scientific Committee for Antarctic Research (SCAR), in an exclusive interview with the *World Environment Report*.

Hemmen was interviewed here after attending the 14th SCAR plenary meeting held in the Argentine Andean city of Mendoza. The SCAR meeting, which ended late last month, recommended studies to determine ecological effects of future exploitation (*WER*, Nov. 8, p. 2). SCAR is a non-governmental body composed of delegations from scientific organizations of the 12 countries originally signing the 1959 Antarctic Treaty. Since then, seven other countries have signed the treaty.

"The region's potential fishing catch could approach

the present world total. Within the next 12 months we hope to see governments move toward operational planning for the study," Hemmen said.

Some practical obstacles to immediate widespread exploitation is the high cost of sending fishing ships to the Antarctic and the need to develop ways of processing the high-protein krill so that it can be sold. Its small size, two inches, and strong taste make it difficult to eat the meat alone. Experiments thus far are focusing on making it into pastes and soups.

"A convention on maritime resources, similar to the one on seals, would be considered a step forward for the rational exploitation of krill," said Aldo Tomo, head of the biology division of the Argentine Antarctic Institute. He was referring to the 1972 convention, convened at SCAR's instigation and signed by nine of the Antarctic nations, protecting seal life.

Turning to mineral exploration and exploitation, Hemmen said that it will lag behind any development of fishing resources. "Traces of natural gas have been found and vast sectors of the region have the geological structure making oil deposits possible. The prospecting areas are there, but how do you drill?" he asked. "The potential oil is mostly off-shore. Glaciers move slowly, but they move, scouring the sea bottom. You can imagine what they would do to a drilling rig," Hemmen said. On the other hand, on-shore drilling is practically impossible because of the two-inch thick ice cap covering the land mass.

At the Mendoza meeting, SCAR established a small group of specialists to study the environmental effects of future mineral research. This is a special worry for Argentina and Chile because portions of Antarctica are geophysical extensions of the South American mainland shared by the two countries.

AGOSTINO BONO

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## Africa: A Look at UNEP's Regional Environmental Program

*NAIROBI*—From his office at the UN Environment Programme (UNEP) headquarters in a pleasant rural setting on the outskirts of Nairobi, Michel Dina-Lobe, UNEP's Regional Representative for Africa, looks out over tropical flowers against a background of coffee bushes in the adjoining plantation. But his work at UNEP tends to center on some of the less attractive aspects of modern Africa—the desert and semi-desert conditions which affect nearly two-thirds of the continent; the new environmental problems caused by an unprecedented build-up in urban populations; and a realization that Africa must act now to protect an environmental heritage beset by increasing pressures.

A native of Cameroun, in West Africa, Dina-Lobe shares with many of Africa's Francophile leaders the benefits of a culture based both in Africa and Europe. A graduate of the Sorbonne, he is just as much at home in Paris as he is in Douala.

He was a prefect—an area administrator—with the Cameroun Government, and then was Cameroun's Commissioner for Planning; he even had a brief spell as Minister-Counsellor at the Cameroun Embassy in Bonn, West Germany, before joining the UN as one of the three program directors working under Maurice Strong to prepare for the Stockholm conference of 1972 which gave birth to UNEP. At UNEP's inception, he was put in charge of its external relations, based in Geneva, and with the move to Nairobi in 1973 he took over responsibility for the African region.

His organization now consists of a deputy regional representative, Donald Kaniaru, a Kenyan lawyer, and two advisors—Albert Mongi, a Tanzanian, who is advisor on human settlements and habitat. A third advisor is to be appointed to deal with desertification.

With the entire continent of Africa to contend with, there is no lack of work for this small team. "We have been fortunate in being at UNEP headquarters, where we have the facilities of the secretariat and continual contact with other UNEP activities," Dina-Lobe says. "However, we expect to move to Addis Ababa next year. The Economic Commission for Africa (ECA), the Organization of African Unity, and the Africa Region of the UN Development Programme (UNDP) are already based there, and it is only natural that we should join them."

Much of the work of the Africa region is concerned with coordinating the activities of member states. There are requests for assistance from governments and organizations, and projects to follow up which require the concerted action of a score or more national and international bodies. With the ECA, for instance, UNEP has been helping African states to evaluate and develop their environmental machinery.

"Each country has its own machinery, its own standards—we can advise on the machinery which should be set up, and on how it can best operate to take advantage of the parallel facilities elsewhere," Dina-Lobe explains.

Africa is such a vast and diverse continent that the environmental problems are almost bewildering in their range and variety. But UNEP's Africa region has reason to think highly of the initiative now being taken to protect the marine environment round the continent. Buoyed by the success recently achieved in the Mediterranean, particular attention is being devoted to the West African coastal area. Between April and July this year, Kaniaru and an Indonesia-based marine sciences expert, Michel P. Angot, conducted an exploratory mission on the marine pollution problems of the Gulf of Guinea.

They visited 14 countries, and as a result of their report, a task force has been set up to plan a concerted program for the area. The immediate aim is a regional monitoring center, and possibly a center for combating oil pollution—something that is recognized as particularly urgent in view of the rapid development there of oil exploitation.

Desertification is another obvious field for concern, and the work in this direction will be enhanced when a regional advisor on desertification is appointed. For the present, there is a secretariat on desertification based at UNEP headquarters, and it is likely that after the desertification conference in 1977 there will be an even bigger impetus for this work. "We realize that close to two-thirds of Africa is either desert or semi-desert, so we cannot ignore our responsibilities here," Dina-Lobe comments.

The recent Habitat conference on human settlements in Vancouver was enthusiastically supported by many African states who realize well enough the enormity of the political, economic, and environmental problems now being created by the rapid expansion of their cities and towns. To help solve the latter, much of Africa is now looking to UNEP for environmental guidance.

The forthcoming move of UNEP's Africa regional division to Addis Ababa underlines the importance of cooperation between UNEP and other African organizations, such as the ECA. An illustration of this activity was the African Regional Meeting held in Addis Ababa in September, in preparation for the UN Water Conference to be held in Mar del Plate, Argentina, in March 1977. The report of this meeting—during which it was noted that as little as two per cent of Africa's water resources are utilized—will in effect constitute the African position on water resources development and management during the deliberations of the global conference.

A water unit already exists in the secretariat of the ECA, and delegates at the Addis Ababa meeting called for it to be strengthened. The UNEP Africa Region is, understandably, highly interested in the work of this unit, and the present moves to expand its activities are welcomed. But as Dina-Lobe points out, the increasing need in Africa to develop water resources means that the environmental aspects attending such development assume even greater importance. CHARLES HARRISON



## Niels Bohr Institute Says Use Of Energy in Denmark Can Be Reduced

*COPENHAGEN*—In its recently released report on the future role of energy in Denmark, the Niels Bohr Institute said that the growth in energy consumption can be reduced over the next fifteen years from the traditional rate of 3-5 per cent per year to under 1.5 per cent without harm to general economic development. Denmark now imports nearly all of her fuel.

A multi-disciplinary group backed by the International Federation of Institutes for Advanced Study (IFIAS) examined Denmark's supply and consumption of energy with a view to formulating new policy. Over a two-year period the study was carried out at the Niels Bohr Institute in Copenhagen concentrating on ways to cut the energy bill through more efficient use and on various alternative fuels that could reduce the dependence on imported oil.

The remedies proposed were wider and better application of insulation and tightness of buildings, automatic temperature controls with low night settings, and more efficient air-conditioning units. Additional proposals focused on increased utilization of waste heat from power stations for district heating and the establishment of a national "heating" plan to achieve optimal efficiency in the use of fuels and distribution networks; the introduction of statutory regulations to ensure better energy economy with electrical appliances; speed limitations and heavier taxes on cars with excessive fuel consumption; and measures to improve manufacturing efficiency.

The report estimates that over the next decade one per cent of the gross national product will have to be spent on energy conservation in the form of increased investments. The introduction of nuclear power and natural gas will require another one-half per cent extra investments. If the price of oil follows the general rate of inflation, the expenditures for energy conservation, new plants, distribution networks, etc., will be in balance by the year 1990 with the amounts from fuel savings.

The total investment required for the period 1976-1990 is estimated to be \$4-5 billion, but the savings in fuel expenditure for the same period would be \$5-6 billion, about one per cent of the GNP. None of the savings imply a reduction in the comfortable Danish life-style.

Alternatives to nuclear power, which is a major political issue yet to be decided, are the development of domestic resources such as solar and wind energy, biogas, and garbage. The use of these free renewable fuels has in the past been hampered by lack of technology, and high installation and operating costs, but as prices of conventional fuels rise, their use could become more attractive economically.

Assessing the options for the years 1990-2005, the report concludes that by continuing to find and introduce more efficient ways to convert and conserve energy, the growth in energy consumption can be held below 1.5 per cent per year. Economic growth can increase without

a high growth in energy consumption by learning to utilize energy resources more efficiently.

The research group for the IFIAS's study was lead by economist Thorkil Kristensen, who was formerly secretary general of the OECD.

Sven Bjornholm, Project leader, said that "In the interplay between man's ability to acquire and utilize energy, the recent oil crisis may be the first indication that we have reached a turning point in the balance between economic growth and energy consumption. There seems to be practically no limit to improvements in energy utilization: know-how is the best substitute for oil but it requires investments." CONSTANCE CORK

## IEA Report Finds U.S. Among Least Successful in Conserving Energy

*PARIS*—The United States, which was largely responsible for setting up the Paris-based International Energy Agency (IEA) after the 1973 oil embargo, has proved to be one of the least successful countries in conserving energy, an agency report recently published here shows.

According to the IEA's 1976 report on "Energy Conservation," energy consumption of its nineteen members last year was 4.8 per cent lower than in 1973 and 14.3 per cent lower than had been projected on the basis of 1968-73 consumption growth. It is true that the U.S. succeeded in reducing its energy consumption by 12.7 per cent from the initial targets, but taking into account performance in relation to gross domestic product growth, only Switzerland did worse among agency members.

According to the IEA, U.S. conservation measures have been extremely comprehensive, but its program has also been severely hampered by oil and gas prices controlled below world market prices and by very low taxes on all fuels. Because of the extensive use of these fuels, the report said, it is clear that prices and taxes must rise soon to reflect the real value of energy if long-term conservation is to be taken seriously by industry and consumers alike.

The report went on to state that the strongest efforts towards U.S. conservation have occurred in the transportation sector, that industry performance is seen as patchy, and that proposed conservation measures in the building industry have yet to be made law.

According to the IEA, the countries which have achieved the sharpest reductions in energy consumption—between 16.5 and 20 per cent—are the Netherlands, Japan, Belgium, West Germany, and Italy. The worst performers have been Turkey, Norway, Sweden, Ireland, and Spain, with cuts ranging from 5.5 to 10.7 per cent. But when it comes to reductions in the amount of energy consumed for every unit of gross domestic product, which removes distortions created by varying growth rates, Belgium, Norway, Luxembourg, Denmark, and the United Kingdom are the best performers;



and Switzerland, the United States, Spain, and Canada the least successful ones.

Most countries, IEA concluded, attach much greater importance to energy supply expansion than to energy conservation, perhaps in the belief that the former increases the gross domestic product and therefore employment, while the latter reduces it with corresponding effect. The agency, however, points out that conservation is often a cheaper alternative to domestic energy production, and also carries the added advantage of producing positive side effects on the environment.

MICHAEL PARROTT

## Taiwan Evolves Simple Process For Converting Hog Manure Into Methane

*TAIPEI*—Ever since the energy crunch, caused by the price rise in oil, scientists in Taiwan have sought new sources of fuel. Wells have been drilled along Taiwan's coastal regions for possible oil deposits; dams are being built to increase hydraulic generation of electrical power; and generating plants using geothermal heat and tidal energy are under consideration.

Now there is emphasis also on conversion of waste into power. Technicians of the Joint Commission of Rural Reconstruction (JCRR) are helping farmers produce home-use energy by converting hog manure into methane, a colorless, odorless, and tasteless fuel gas. It is already being used for household purposes and for operating internal combustion engines.

The methane production process used by the JCRR is simple. Basically, it consists of an excavated brick-lined digester, an inverted gasholder, and a hose leading from the gasholder to the house delivery point. The entire installation costs about \$300 and is affordable by most Taiwan farmers.

Each day, waste and wash water from the pigsty is channeled through a cement pipe to the digester, where it is stored for about two weeks. The methane gas is produced by bacterial action, otherwise known as anaerobic fermentation. Such gas production depends on many factors, including retention time. According to JCRR experiments, the length of time the waste remains in the digester is determined by the amount of water which enters with it. The more wash water, the shorter the retention time.

Taiwan currently produces about six million hogs annually, most of which are raised by individual households. Paved hog-pen floors insure that the waste can easily be washed into the gutter leading to the methane generator, or to a pit where it is stored as fertilizer.

The Taiwan Sugar Corporation, which raises nearly 100,000 hogs a year, uses swine waste to improve cane production. Taisugar reported that the application of 30-

40 tons of compost of 55 per cent solid manure and 45 per cent chemical fertilizer per 2.5 acre of cane field increased the cane stalk by 10 cm., or about 2 per cent of the millable stalk. The result is an increase of sugar yield by nearly 1.9 tons (per 2.5 acres), as compared with using chemical fertilizer only.

Admittedly, the production of methane from animal waste is not a recent discovery—its production from decomposing organic material was proved possible two centuries ago—but the Taiwan experiments are making it more practical, and at the same time improving sanitary conditions in rural farming areas.

SPECIAL DISPATCH TO WER

## Theme of Next WWF International Congress: 'The Fragile Earth'

*GENEVA*—The World Wildlife Fund (WWF) announced here last month that some of the world's best known natural scientists and conservationists have agreed to participate in its fourth annual international congress that will open November 28 in San Francisco.

Theme of the conference will be "The Fragile Earth—Towards Strategies for Survival." Sir Peter Scott, distinguished British naturalist, will preside over the three-day meeting during which key issues of population, economics, natural resources management, conservation technology and energy will be discussed.

Dr. Russell W. Peterson, former Chairman of the Council of Environmental Quality, Washington, D.C., will lead the seminar on population, and the seminar on economics will be led by Barbara Ward (Lady Jackson), President of the International Institute for Environment and Development, London.

Dr. Raymond F. Dasmann, Senior Ecologist for the International Union for Conservation of Nature (IUCN), Morges, Switzerland, will lead the panel on Natural Resources Management, while the Conservation Technology seminar will be chaired by Dr. Ruth Patrick, Chairman of the Board of the Academy of Natural Sciences, Philadelphia.

Maurice F. Strong, Chairman of Petro-Canada and former executive director of the United Nations Environment Programme, will lead the panel discussion on energy, and Dr. Lee M. Talbot, Assistant to the Chairman for Scientific and International Affairs at the Council on Environmental Quality, will chair the seminar on "Man, Wildlife and Wilderness: Common Destiny."

At the closing plenary session, the World Wildlife Fund Gold Medal and other honors for 1976 will be conferred. Dr. Aurelio Peccei, President of the Club of Rome, will speak at the final dinner.

WILLIAM G. MAHONEY



## In Brief...

### Agro-Industrial Wastes Found Cheap Source of Proteins

Argentina is experimenting with ways of utilizing hitherto waste proteins contained in vegetable by-products such as seeds, husks, and pulp. Such by-products, produced annually, contain about 340,000 tons of protein, according to the state's National Institute for Industrial Technology conducting the experiments.

The institute is concentrating on protein by-products of soybeans, sunflowers, and peanuts. Experiments to date include making flour and extracting oils and juices—all of which can be used as food enrichers or combined to form new foods.

Agro-industrial wastes are a cheap and efficient way of fattening cattle, according to tests conducted by agronomists Jorge Tapia and Valentin Moran under auspices of the provincial government of Rio Negro. The experiments show beef cattle growing about 1.5 pounds per day on a diet of apple pulp—the residue from cider-making plants—mixed with residues from breweries and meat-packing plants. The cost of the feed averages less than \$0.10 per 1.5 pounds gained.

### British Develop New System For Separating Oil and Water

A new, single-system process for separating oil and water has been developed by the pollution control systems division of Imperial Chemical Industries (ICI), Britain's largest industrial concern. Known as "Flofoil," the company claims it can reduce concentrations of oil in water by better than 99 per cent, and can treat high volumes of effluent at low-running costs.

As an example of its speed, Flo-

foil can reduce an oil-water mixture containing 1,000 ppm (parts per million) oil, as at an oil refinery, down to 1 ppm within a few minutes—a process which meets all known international anti-pollution standards.

The coalescing media on which the system depends have special surface properties. The oil droplets coalesce into larger drops as they pass through the media and their release on the other side is controlled so that they rise to the surface as a continuous layer which is easily removed. The different form of Flofoil media developed thus far can remove oil droplets down to 1 micron (0.001 mm).

The new process is available internationally and is expected to have particular application to engineering, oil, and transport industries.

### Yugoslavia Passes First Law Curbing Excessive Noise

Slovenia, the most industrially advanced of Yugoslavia's six republics, passed a law early this month to curb excessive noise. According to Tanjug, the national news service, this is the first such law passed in Yugoslavia.

The law defines as noise every sound that affects the psychological and physical condition of persons, impedes their work or reduces their working ability, prevents their rest or is harmful to their health. Excessive noise is prohibited in residential areas, apartment buildings, green zones in urban sections, health resorts and all other areas intended for recreation and tourism—parks and nature preserves.

The law obliges investors, drafting bureaus, contractors and urban development boards to respect noise prevention regulations when deciding upon sites for factories or other installations that could produce noise. Between 10 P.M. and 6 A.M., it prohibits use of any construction machinery, radio and

television sets, and cars that produce excessive noise.

Offenders are liable to fines ranging from \$275 to \$2,750, and prison terms of up to 30 days.

### Soaring Population Growth In Egypt Termed Grave

Egypt's population has increased by a million in the past year and now stands at 38 million, according to Gamal Askar, Chairman of the Central Authority for General Mobilization and Statistics. Askar said he is stressing this fact openly to draw attention to the gravity of Egypt's situation: a population increase of 2,300 daily, or one person every 37.5 seconds.

He added that if the present growth rate continued, Egypt's population would be about 70 million by century's end, with over 20 million people in greater Cairo alone.

Cairo's population has now reached 8,770,000, which reflects an increase of 375,000 in just 14 months. During the same period the population of the Alexandria governate (Egypt's second largest population concentration) increased by 74,000 to 2,377,000.

### France Warns East Germany To Clean Up Oil Tanker Spill

The French government has warned the East German owners of the 9,800 ton tanker "Boehlen" that they may become liable for the cost of removing oil pollution caused by the shipwreck of their vessel off the Brittany coast during storms earlier this month. The tanker owners have been given ten days to take all the necessary measures to prevent oil seepage from the tanker. If the appropriate measures have not been taken, the French government has



reserved the right to intervene and charge the costs to the tanker owners.

Approaches have reportedly been made to a Dutch salvage company in the hope that the breaches in the hull can be welded, but such an operation may prove difficult in view of sea conditions.

Meanwhile, French authorities have called in troops to collect the thick oil which is already collecting on the Island of Sein, a fishing community just off the mainland. Unable to use chemical detergents because of the danger to foliage and plant life, the soldiers are obliged to collect the oil slicks in dustbins which are then taken to the mainland.

This is the second time this year that the Brittany coast has been threatened by oil pollution from ship-wrecked tankers. In January, the brand-new 250,000 tonner "Olympic Bravery" broke up on the rocks off the Island of Ushant. Although the vessel was empty except for oil needed for the engines, the resulting pollution took months before it could be removed. Fears are now being expressed here that the smaller East German tanker, which was fully loaded, may cause even greater problems.

### Calcutta Has High Rate Of Pollution-Caused Diseases

More than 50 per cent of Calcutta's nine million people suffer from respiratory diseases due to air pollution. That's the conclusion of a survey conducted by the Calcutta Metropolitan Development Authority. The survey found that each day, 250 tons of particulates and 75 tons of sulphur dioxide and oxides of nitrogen, generated by domestic and industrial coal burning and vehicle emissions, are released into the air. Added to that is the smoke emitted by over 100,000 domestic ovens. In winter, the report said, reduced visibility arises because "inversion" conditions are more frequent and severe.

### Colombia Requested to Close Polluting Kaolin Plant

Government authorization to close a kaolin plant on grounds of dangerous pollution has been requested by the mayor of Tunja, capital of Boyaca state north of Bogota.

Caolinas Boyaca, S.A., which produces white clay for porcelain, has failed to follow a Ministry of Health order to install filters to prevent air contamination of nearby residences. Following a petition by the local populace claiming factory dust had destroyed gardens and lawns, Mayor Joaquin Alvarez asked the Ministry of Health to close the plant.

A nearby metallurgical plant which also lacks filters to prevent air pollution may also be closed.

### Brazilian Do-Gooder Fights Noise Pollution With Pistol

According to local newspaper reports, Rio de Janeiro has a defender of the ecologically oppressed, who specializes in fighting sound polluters. Although Rio is one of the noisiest big cities in the world, mercifully the decibel levels come down in the evenings, permitting sleep in most parts of the city.

Most, but not all. For the last six years, the city has been building a subway system, and just recently increased its transportation budget to allow construction crews to work around the clock. Or at least they were doing so until one night last week when the ecological defender struck. Newspapers described him as a distinguished looking gentleman, even though he was dressed in pyjamas when he appeared at a subway construction site in the residential district of Flamengo.

What distinguished his appearance even more was the gun he was carrying. His calm but firm order to stop the pneumatic drilling was promptly obeyed and peaceful si-

lence returned to the neighborhood. However, several days later the construction company called for police protection, and now the drills are back at work—but there are fewer of them at night.

### Poland Urges Ban on Use Of Environment as War Weapon

Poland's chief delegate to the 30-nation Disarmament Conference, held in Geneva recently, urged that a draft convention to ban use of the environment as a weapon of war be adopted as quickly as possible.

Ambassador Eugeniusz Wyzner said that the speedy conclusion of such a convention would not only serve to curb the technological arms race and prevent its extension into new areas, but would also consolidate progress towards political detente and create the basis for easing tensions on the military level.

The convention was jointly chaired by the Soviet Union and the United States in 1974.

Ambassador Wyzner appealed to disarmament delegations to intensify their efforts towards compromises so that an agreed-upon version could be presented to this Fall's session of the United Nations General Assembly.

### Hungary Builds Its First Nuclear Power Plant

Hungarian authorities have reported here that construction is progressing on schedule at the country's first nuclear power plant at Paks.

Some 3,000 laborers and experts are working on the project that will eventually provide 1760 megawatts power to meet the country's mounting electric power demand. Hungary has projected that electric energy demand will rise from the 24,400 million kilowatt hours in 1975 to



34,600 million by 1980 and to 67,000 million by 1990. In other terms: from 4,186 mw peak load in 1975, to 6,000 mw in 1980 and to about 12,000 mw by 1990.

The main housing for the reactors and turbines will cover about 25,000 square meters. The first 440 mw unit is scheduled to go into service in 1980 and all units should be functioning by 1984, officials said.

### Fire Ants Pose Grave New Threat in Galapagos Islands

The World Wildlife Fund (WWF) recently announced in Geneva that fire ants are posing grave new threats to conservation of the unique Galapagos islands in the Pacific, where Charles Darwin found living evidence for his theory of evolution.

The ants were introduced from the South American mainland to inhabited areas of the Galapagos, but have now been discovered in some uninhabited areas which should be conserved. The WWF said that dras-

tic steps are being taken to eliminate them before they spread further and damage invertebrate fauna, such as snails, which are important elements in the Galapagos ecosystems, with their giant tortoises, land and sea iguanas, and other unique life forms.

All vegetation has been removed and burned over an area of 300 square yards around the infected site on northeastern Sante Fe Island and the entire zone treated with insecticides. Dr. Craig MacFarland, Director of the Charles Darwin Research Station, reported that these measures appeared to have eliminated the ants (*Wasmannia auropunctata*), but that surveillance was being continued.

### Colombia Funds Ambitious Reforestation Program

The Colombian government has submitted a project for a forest capitalization fund to congress to encourage the development of

commercial forests and protect the nation's tree reserves.

Agriculture Minister Rafael Pardo, the bill's sponsor, stated that the legislation is urgently needed to rationalize the country's forest resources. Colombia has 87.5 million acres of forest, but at the current rate of destruction of 3.2 million acres per year, these resources will be exhausted within three decades. (Only 10,000 acres are replanted annually, but trees need only 15 years to reach maximum development in Colombia compared to 80 years in colder climes.)

The fund is to be administered by the ministry of agriculture and the directors of five state banks, including the Bank of the Republic, which will underwrite the sale of forest bonds to obtain financing. Colombia's insurance companies will be required to invest a percentage of their reserves in these bonds. The fund's administrators also will be empowered to negotiate local and foreign loans for the forest projects.

The initial aim is to increase reforestation to 50,000 acres per year at a cost of \$5.7 million.

## Calendar...

**November 28-December 1**—Fourth International Congress—"The Fragile Earth: Toward Strategies for Survival." San Francisco. Sponsored by World Wildlife Fund.

**November 29-December 3**—Task Group on Environmental Health Criteria for Noise, Geneva, WHO.

**November 29-December 3**—Marine Enrichment Protection Committee—6th Session. London. Inter-Governmental Maritime Consultative Organization.

**December 13-17**—Working Party on Housing (6th Session). Geneva, ECE.

**December 16-18**—Inter-Governmental Consultative Committee on Environmental Problems of Specific Industries. Paris. United Nations Environment Programme.

**December 20-23**—International Conference on Bicycle/Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.

**January 11-14**—Seventh Session of the Working Party on Air Pollution Problems. Geneva. UN Economic Commission for Europe (ECE).

**January 1-18**—UNEP/FAO joint Seminar on Residue Utilization: Management of Agricultural and Agro-Industrial Wastes. Rome.

**January 31-February 2**—First International Cadmium Conference. San Francisco. Sponsored by The Cadmium Council, The International Lead Zinc Research Organization, The Cadmium Association of London.

**February 21-25**—Fifth Session of Senior Advisors to ECE Governments on Environmental Problems. Geneva, ECE.

**March 28-30**—The Fourth International Health Conference. Washington, D.C. Sponsored by the National Council for International Health.

**March 29-April 1**—Seminar on the Petroleum Industry and the Environment. Paris. UNEP.

**April 19-21**—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resources. Geneva.





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## Brazil To Spend \$500 MM On Use Of Alcohol For Automotive Fuel

*RIO DE JANEIRO*—Brazil is putting up big money—\$500 million—to back up its ambitious plan to save petroleum by mixing alcohol with gasoline for use as automotive fuel.

“The use of alcohol in internal combustion engines is not new. In Brazil, as elsewhere, some cars were running on alcohol as long as 50 years ago,” said Joao Bosco, general director of the National Institute of Technology (INT). “But,” he added, “no other country has undertaken such an extensive alcohol program as we have.”

Last year Brazil announced the start of an integrated program looking toward the complete substitution of alcohol for gasoline. This ambitious long-range plan has a realistic short-range objective, and that is to slowly introduce ever higher percentages of alcohol into gasoline. Meanwhile, tests are being run on everything from growing alcohol raw materials to distilling methods, percentages of mixture, alterations in car engines, right down to new designs for engine blocks built to run on alcohol alone.

Lest he be singled out as an impractical dreamer, Bosco pointed out that many well-known Brazilian scientists have been experimenting with alcohol-run engines on a massive scale—more than a thousand cars, buses, trucks, and tractors—for three years. He feels that the experiments have proven economically viable and that given a combination of funds and time, the bugs can be ironed out.

Bosco told *WER* that the alcohol being used is all home grown and that “this country has lots of room to plant fuel crops which will not replace food crops. . . . We also have all the necessary prerequisites for developing a viable alcohol as a fuel industry: territorial extension, availability of new arable land, land appropriate for alcohol producing crops—Brazil is already the world’s largest sugar cane grower—technical development and a society willing to accept a challenge.”

Practical application of the alcohol plan began even before it was officially announced in 1975. Ever since the energy crisis, Petrobras, the Brazilian oil monopoly, has been adding 3, 4, and up to 6 per cent of alcohol to gasoline, whenever possible. Now the aim of the first-stage, five-year alcohol plan is to increase this percentage to 20 per cent by the end of the decade.

The problem with this first stage is agricultural. Twenty per cent of Brazil’s gasoline consumption comes to around

1.3 billion gallons of alcohol. At a yield of some 800 gallons of alcohol per 2.5 acres, Brazil will have to harvest an additional four million acres of new land (with sugar cane or other alcohol producing crops) to reach the above total mark. It would also require scores of new distilleries.

Experiments have shown that the 20 per cent mixture requires no changes in regular automobile engines, and that perhaps a 50/50 mixture is the most economical.

It was further found that the higher the alcohol mixture the less pollution is emitted and, apparently, even the drivability and gas mileage improves. The alcohol used, 96 gay lussac, contains less carbon monoxide and lead, which gives it more inflammability and makes it burn better. However, more than 50 per cent alcohol is hard on the engine, even an adapted one.

G. HAWRYLSHYN

## Czechs Dispose of Nuclear Wastes By Mixing Them With Cement

*PRAGUE*—A seemingly safe and imaginative way to dispose of contaminated radioactive waste waters from nuclear power stations was presented last month at the Brno, Czechoslovakia, inventions fair, INVEX 1976.

Ordinarily, radioactive waste is sealed in steel drums and buried either in the sea or in caves. This method, however, necessitates monitoring for at least 30 years to make sure radioactive material does not escape and contaminate the environment.

In this instance, the Prague Institute of Mechanization and Automation made use of the already-known fact that cement binds radioactive wastes when both are thoroughly mixed. Therefore, the mixture can be moulded by remote control to produce cement blocks in which radioactivity is reduced by a factor of 100. These blocks,

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in turn, then become suitable, say, for use as building foundations. Developed in a densely populated country with an ambitious atomic program, the Czech system, it is claimed, fully complies with existing safety standards.

A single unit is geared to deal with 460 cubic yards of waste waters per annum, which, engineer Frantisek Kadera of the Institute said, should cover the per annum waste of the type of nuclear power stations planned for Czechoslovakia. The equipment thoroughly mixes the cement and radioactive waste water under pressure of 300 kilopounds per .155 square inches to form cement blocks. The automated system also provides for manual manipulation in case of failure, requires only a single attendant, and a working area of 52 by 98 feet.

Water from the moulding process is recirculated and compression of the block is such that possibility of radioactive leaching is minimized. IVA DRAPALOVA

## Danish Group To Stick Warning Labels on 'Dangerous' Foods

**COPENHAGEN**—Danish environmentalists are planning to demonstrate against foodstuffs they consider dangerous to health by sticking warning labels on items in a cooperative supermarket chain which advertises that "This is your own shop." The "sticking bee" will take place on a secret date shortly before Christmas.

The adhesive labels, which will be difficult to remove, will be stuck on ten foods—as yet unnamed—which the organizers claim contain dangerous substances liable to cause cancer or liver damage. They also claim that their planned action is legal.

The group behind this venture was founded in 1969 and calls itself NOAH—for the Biblical character who knew the deluge was coming and took precautions. It publishes books and pamphlets, organizes demonstrations against environmental dangers, and runs a summer study camp on environmental problems. It has 40 branches throughout Denmark.

NOAH alleges that food manufacturers ignore warnings by scientists. Although all food packages in Denmark list the chemical contents therein, NOAH maintains that the ordinary shopper doesn't understand what the labels mean.

If NOAH is prevented from affixing the labels, its members will picket the stores with placards listing the questionable foodstuffs. CONSTANCE CORK

## Desalination Congress in Mexico Hailed as Success by 500 Experts

**MEXICO CITY**—The First Desalination Congress of the American Continent has been hailed here as a success by 500 specialists who attended from the Americas, Asia, Africa, and Europe. The meeting offered an opportunity

for the exchange of ideas and projects among nations which have similar desalination needs.

Dr. Rafael Vargas Salazar, Mexican navy admiral and chief of the National Commission for the Processing of Saline Waters, said that in this year alone Mexico has installed more than 50 desalination plants in the twin states of the Baja California peninsula. While most provide 26 gallons of water per day per person in the communities they serve, one in particular, at San Quintin, Baja California Norte, produces 104 gallons per person. Although the primary purpose is to provide drinking water to residents, the new desalination plants also are furthering industrial, mining, and tourism development.

Vargas Salazar, who in 1971 helped initiate Mexico's desalination program within the Secretariat of Water Resources, pointed out that 67 percent of Mexico's territory is arid or semi-arid.

Richard Schmitt, head of the U.S. Army's Sanitary Sciences Research and Development division, told the Congress that portable reverse osmosis desalination units are available through the Army for loan—but not for sale—wherever they are needed. Recently, they were used in La Paz, Baja California Sur, after that city was hit by a hurricane. The U.S. Army holds the patent on the apparatus which can both desalt water and purify water contaminated by chemicals or radioactive materials.

Nuclear energy to power desalination plants is less expensive than combustible fuels and more widely available in the world, a multinational group of speakers said. Dr. Eliezer Tal, director of Israel's program; Dr. William S. Butcher, director of the U.S. Department of Interior's Office of Water Research and Technology; and Dr. Annie Sugier, member of the French Atomic Energy Commission, said Israel is now building a nuclear energy desalination plant. CATHERINE HATCH

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## Special Report: An Interview With Mexico's Environment Chief

**MEXICO CITY**—"We are leaving an environmental program for Mexico. What the next government will do with it—well, who can say?" Francisco Vizcaino Murray, Mexico's top environmental official paused a minute, then continued:

"All over the world now, we have a disgraceful situation: Problems of the environment have lost their importance. There are too many other things that governments are worrying about: unemployment, underemployment, inflation, recession, petroleum. . ."

The Mexican under-secretary for environmental improvement did not mention another very real problem facing Mexico at this time, one encountered in many countries. When the six-year term of President Luis Echeverria ended on December 1, there was no assurance that any of his high-priority environmental programs would be continued.

Traditionally in Mexico when the presidency changes hands, there is a massive turnover in cabinet and sub-cabinet posts, in programs and pace. Those who serve in one president's cabinet do not expect to serve in another's and Vizcaino Murray, who has worked near-miracles on the Mexican environment, was appointed to the newly-created environmental sub-secretariat by Echeverria in 1972.

"All of these world problems of a political and economic nature have set back environmental programs everywhere. Governments just feel that there are other things more pressing, more important. I'm speaking not just of Mexico but of everywhere, even the United States."

**Water Problem**—The under-secretary, who also is president of the Governing Council of the UN Environment Programme (UNEP), said in an interview with *World Environment Report* that the major environmental problem facing every country is that of water.

"Here in Mexico City, we often have smog or haze in the mornings, but it is a normal inversion based on the fact that we lie in a bowl, a valley, surrounded by high mountains. By mid-afternoon, skies usually are clear. But water—that is the real problem: conserving it and keeping it clean."

Vizcaino Murray believes that the major work of environmentalists in all governments is to "change the mental attitudes of the people—people in government, businessmen, workers, students.

"We must make them aware of their habits and customs which lead to a deterioration and waste of natural resources, and we must encourage them to change those habits." This kind of public education concerning the environment is a major role he says he plays as president of UNEP's Governing Council.

In Mexico, besides the general water problem, there is the "problem" of Mexico City, he said, which occupies 48 per cent of the national territory, but has 131,000 busi-

nesses and 13 million inhabitants. It also has 1.5 million automobiles. This is our biggest single problem—what to do with Mexico City."

**Strongest Law**—Vizcaino Murray believes Mexico has one of the world's strongest and most advanced federal laws for the prevention and control of environmental contamination. Under that law, drawn by President Echeverria, are regulations governing dust and smoke and water. Under Vizcaino Murray's direction, a national inventory was taken of factories and businesses which were contaminating the air and water. With that documented evidence, the sub-secretariat then set about to convince these firms to install non-polluting devices or to change their manufacturing procedures. Barring that, the firms were fined or closed by the government.

Studies of contamination of the environment by human waste led to programs coordinated to move the poor into low-rent public housing and to clean the seas by installing more storm sewers or moving commercial ports away from bathing areas.

**Solar Energy**—Part of the sub-secretariat's work led to the construction of solar energy water-well pumping stations in several small villages. Noise pollution has been attacked with a new Mexico City law against honking, except in emergencies.

"Every year, for those of us in this work, there is something else that needs doing," Vizcaino Murray observed. He is well aware of the political nature of his job and the imminent change of administration, but he is continuing, full time, to try to improve Mexico's environment, despite some discouragement over the worldwide loss of urgency for environmental matters.

"At the U.N. meeting in Stockholm in 1972, everyone agreed that environmental contamination was the Number One problem facing the world," he recalled. "But then came 1973 and 1974, inflation and recession. These problems are important, of course, but if the people cannot breathe the air or drink the water or live with dignity as human beings, then I believe the governments must do something about this situation even as they are creating more jobs and fighting inflation."

Even if Vizcaino Murray does not continue in office, he intends to remain active in environmental work. His term as president of UNEP's Governing Council does not end until May, 1977. And he is certain to continue spreading the word on the need for environmental improvement in person and through his book, "Contamination in Mexico," which is the only one of its kind written in Spanish and presents a thoroughly detailed account of the sub-secretariat's work from its creation to the present.

CATHERINE HATCH

*(This is the first of a series of exclusive interviews with senior environmental officials from many countries that WER will feature from time to time.)*



## World Wildlife Fund Establishes Task Force to Aid Asian Elephant

**NEW DELHI**—World Wildlife Fund (WWF) conservationists are expressing increasing concern at the fast-shrinking habitat of the Asian elephant and the possible extinction of the species itself in the years to come, a spokesman of WWF told *World Environment Report* here.

The Survival Service Commission of the International Union for the Conservation of Nature has decided to undertake an in depth investigation to find remedies for this potential danger, he said.

An Asian Elephant Group has been formed with Robert Olivier, until recently a research officer in the Games Department of Malaysia, and an elephant research ecologist, and J. C. Daniell, Curator of the Bombay Natural History Society, as co-chairmen. An Elephant Task Force has also been set up by the World Wildlife Fund, Southern Region, and it is surveying the situation in South India where large elephant herds roam the forests of the Karnataka and Kerala states.

Olivier and Daniell also toured South India to study the work done by the Elephant Task Force so far. Olivier told *WER* that the Survival Service Commission began considering the problem last June because it found that in Burma, Cambodia, Malaysia, Indonesia, Sri Lanka, Vietnam, and Thailand the elephant was facing a serious situation of shrinking habitat.

In Malaysia, for example, the virgin forest is being cleared with such rapidity that by 1990 "no lowland forest will be left in that country," he said. In South India, where the majority of elephants live, the number has dwindled to half in the last 30 years, he added.

The Asian Elephant Group will hold its first meeting in Bangalore, the capital of the Karnataka state in South India, this December. The Elephant Task Force, headed by Madhav Gadgil of the Center for Theoretical Studies of the Indian Institute of Science, Bangalore, will serve as the expert group for South India.

By rough calculations, there are 40,000 elephants in Asia, a small number for such a vast area. The Asian Elephant Group will initiate action in selected areas—particularly in South India—and also launch an international campaign to save the elephant, including the African species, from extinction.

Formerly, the Indian maharajas, nawabs and the rich mahants owned large retinues of elephants for ceremonial occasions. But now that the maharajas have disappeared from the Indian scene—having been pensioned off—the maintenance of elephants has become a costly luxury for others. The various forests around the cities where these elephants once fed themselves, and where devotees fed these sacred animals with sugarcanes, sweetened rice, and wheat, have all disappeared. And, of course poachers also have taken an inordinate toll for the valuable ivory.

R. SATAKOPAN

## UNEP Director Addresses First UNESCO Meeting Held in Africa

**NAIROBI**—In a recent address before the UNESCO general conference here, the UN Environment Programme's Executive Director, Dr. Mostafa K. Tolba, stressed that the environment is a one-world issue, and not the exclusive concern of the north or the south, the east or the west. And, he added, support for the environment program logically carries a commitment to act. This year's UNESCO conference was the first ever to be held in Africa, and the first to be held away from UNESCO headquarters in Paris.

"It can no longer be said that environment must be a hindrance to economic growth or development, nor that the facts about environmental degradation are too scant and uncertain to justify a response," Dr. Tolba said. "We now know that our only hope for a more prosperous future is the adoption of new ways of living which are less destructive of natural resources and the environment at large, and more equitable in sharing the earth's resources."

Dr. Tolba also repeated what he had told the UNESCO executive board earlier in the year—that UNESCO, through its endeavors in education, science and culture, and because of its international standing, has a prominent role in ensuring sustained development for all, rich and poor alike. "Development without destruction is the goal which all of us within and outside the UN system should aspire to achieve at all levels," he said.

Dr. Tolba noted that as early as 1951, UNESCO had embarked on the first global attempt to combat desertification, with its arid zones program. Since then it has been involved in a number of other programs on the environment. He also recalled that UNEP was established in 1973 to give cohesion to the numerous environmental activities under way within the UN system, but, he said, the environment program is not the exclusive concern of UNEP.

Referring to the major program in environmental education jointly initiated last year by UNESCO and UNEP, Dr. Tolba noted that the first phase will culminate in late 1977 in an international conference, at the ministerial level, to be held in Tbilisi, in the Soviet Socialist Republic of Georgia. "We hope that the conference will endorse an action plan and policy recommendations, thus opening the way to a second and predominantly operational phase, involving technical assistance and environmental education activities."

Earlier this year, the UNEP Governing Council, meeting in Nairobi, had authorized the establishment of regional program activity centers in environmental education and training. The first of these is likely to be set up early in 1977, in close collaboration with UNESCO and other UN bodies. The centers will form the nucleus of an institutional network in each region—a concept which UNEP hopes to see endorsed in the plan of action due to be adopted at Tbilisi.

CHARLES HARRISON



## Japanese Seek Publication of WHO Criteria On Nitric Oxide Discharge

**TOKYO**—Japan's Environmental Agency has filed a request with the World Health Organization (WHO) seeking official publication of international environmental criteria involving discharge of nitric oxide (NO) which was agreed upon during a meeting of experts held under WHO sponsorship in Tokyo this past summer.

The Japanese agency based its request on information which strongly suggests that the criteria originally established by WHO as a result of the Tokyo conference has now become public knowledge in Japan despite an agreement that this information was not to be made public until formally approved and officially announced sometime next year.

Officials of the Japanese agency claim that the criteria somehow were leaked to local industrial circles and now are being used to support the argument that the country's standards for NO emission control are much too strict. Some circles in the automobile industry, for example, contend that Japan's emission standards were established without sufficient scientific examination.

According to a report now readily available in Tokyo concerning international environmental criteria, the global maximum tolerable standards were set by WHO for NO discharge at between 0.1 and 0.17 parts per million (ppm) per hour.

Japan's environmental standards, established in May 1973, put the daily per hour emission average at 0.02 ppm. Officials of the Ministry of International Trade and Industry (MITI) and local industrialists are now emphasizing that the WHO standard is considerably more lenient than the level enforced by Japan's Environment Agency and that standards should be eased in this country.

To counter such arguments, according to the Japanese Environment Agency, WHO would first have to officially reveal to the public the full contents of the international environmental criteria established in Tokyo earlier this year. Agency authorities in Tokyo insist there is no reason to lower Japanese standards because of industrial pressure.

The agency, in fact, emphasizes that the international criterion of 0.1 ppm is more or less equivalent to the daily average of 0.04 ppm established as the intermediary goal of Japan's Environment Agency—provided the former criterion is converted according to actual air pollution conditions existing in Japan today.

It is the contention of Japanese officials that the WHO criterion actually is a short-range goal compared to the Japanese long-range target. It is also claimed that the criterion established by WHO was based on the assumption that nitrogen dioxide (NO<sub>2</sub>) will cause injuries to health when its density exceeds 0.5 ppm. This is roughly the same calculation employed to determine the present Japanese standard.

Environment Agency authorities have reminded MITI

officials that WHO experts considered the problems of NO<sub>2</sub> pollution alone and that, in any event, they tend to agree that should air pollution by other elements be included, then overall standards must become stricter.

Meanwhile, the Tokyo Metropolitan Government is proceeding independently to study the way in which nitric oxide develops into nitrogen dioxide to pollute the capital's air. Studies completed so far support the belief that 95 per cent of the nitric oxide stemming from automobile exhausts and factory chimneys soon become oxidized into nitrogen dioxide. This has led to the belief in Tokyo that strict controls soon must be applied to the generation of nitric oxide itself.

Officials of the Tokyo Government's Environment Protection Bureau and the Research Institute for Environmental Protection (RIEP) currently are cooperating in an investigation into the inter-relationship between nitric oxide emissions and meteorological conditions, including temperature changes and photochemical reactions.

It is expected that the eventual findings of these studies will become the basis for new measures in Tokyo to further control air pollution and might possibly lead to establishment of an absolute ceiling on the total number of vehicles (including trucks and buses) which will be permitted to operate inside the boundaries of the metropolis at any one time. Just how this limitation might be imposed has not been thought out.

A.E. CULLISON

## Genetic Effects of Exposure To Radiation Studied by Irish Group

**DUBLIN**—A \$200,000 study of ways to repair damage caused by exposure to radiation is under way in Ireland, with the aid of a grant from the European Atomic Energy Commission.

The investigation being carried out by six Irish scientists from three Irish institutions (Trinity College, University College, and the College of Technology) will research how to heal victims in the event of a nuclear power accident. The project is but one of many initiated throughout Europe, after the signing of the original Euratom Treaty, to study the effects of radiation on biological systems.

The Irish groups are concentrating on the genetic effects of radiation. According to Professor Francis Winder, of Trinity College in Dublin, "essentially what we are doing is making a study of the repair mechanisms in the human. It is hoped that with better understanding of these mechanisms that the danger caused by radiation to genetic systems may hold out a hope of protecting human and other populations from the harmful effects of radiation. What we are doing is studying the enzymes in cells in the repair process and quite a bit of progress has been made in this direction in the past ten years."

TOM MACSWEENEY



## In Brief...

### Survey Finds Children Most Affected By Air Pollution

Children are the worst affected by atmospheric pollution, the second conference of the Sao Paulo Pediatric Society has concluded. Various papers presented on the subject show that with the increase of air pollution in Sao Paulo—one of the world's worst polluted big cities—the incidence of respiratory disturbances in children also increased, especially in those with asthma or bronchitis. A study done in the suburb of Santo Andre showed that in 1972 the increase of respiratory ailments in children went up three percent while this year it is up to eight percent. The worst outbreaks occur in the middle of the Brazilian winter, and in June and July, when Sao Paulo's air pollution is at its worst.

### New Electric Trucks in Japan Attain 250 Miles per Charge

A second group of experimental electric automobiles developed by Japan's International Trade and Industry Ministry's Agency of Industrial Science and Technology are now undergoing highway tests. This is a follow-up to the first group developed in 1974. The new group comprises four vehicles—two pickup trucks and two commercial service trucks. Each of the vehicles has attained a distance of more than 400 kilometers (248.4 miles) per charge. This is by far the longest distance ever known to have been covered by an electric vehicle anywhere. Each of the vehicles has been able to attain a speed of more than 100 kilometers (62.1 miles) an hour, thus making the new electric vehicles almost as capable as the conventional gasoline engine cars.

The new electric automobiles feature a hybrid and interchangeable combination of two kinds of

battery cells. A high output lead cell is used for starting and acceleration and an iron-zinc-air cell for ordinary operation and charging of the lead cell during ordinary running. The body is made of a new lightweight plastic.

These last test models were developed under the Institute's \$19 million (5.7 billion yen) five-year project ending next March. However, it will be a long time before such vehicles can be a long time before such vehicles can be commercially developed for general use because of the high production costs and the need for practical charging and cell-replacing service facilities.

### Motorboats To Be Banned From Czech Reservoirs

The Czechoslovak news agency Ceteka announced recently that use of motorboats and houseboats on some water reservoirs will be restricted starting next month in order to protect the environment.

It said that long-term measurements demonstrated that a single motor boat passing a given point raised the noise level by some 60 to 70 decibels—the equivalent of the level at a Prague traffic intersection.

In addition it noted that the boats emitted unburned oil and spent gases. In some regions the oil film is already several millimeters thick, the report said.

The new restrictions will not apply to public shipping, supply transport, the health and security service, and water sports such as skiing.

### Construction and Environment Reconcilable Says ECE

Representatives of 24 countries who participated in the United Nations Economic Commission for Europe's Fifth Seminar on the Building Industry in Budapest last month

concluded that industrialization of construction can be reconciled with high environmental quality.

The seminar found, the ECE said, that high priority should be given to harmony between construction and the environment. The group recommended that the "bulldozer" approach to urban renewal should give way to more flexible methods, combining modernization, renovation, and rehabilitation with the replacement of selected buildings.

International cooperation should be developed to help governments and professional organizations in shaping "environment-conscious" strategies for planning, design, construction, improvement and use of buildings, the seminar found. It recommended that in line with conclusions adopted at the Helsinki Security Conference, information be exchanged through the ECE on domestic regulations covering the protection of the environment in building activities.

"The development of industrialization and dimensional coordination must not be achieved at the expense of the quality of life, of the working environment or of the built environment," the seminar agreed. It proposed that states encourage research aimed at finding new materials which have less harmful effects on the environment and that possible implications of environmental measures on neighboring countries be taken into account.

### Argentine Station To Receive Earth Photos From Satellite

Argentina is planning to build a land receiving station to pick up earth photos transmitted by the LANDSAT satellite system. The photographs are useful for crop forecasting, map-making, forestry development, and mineral prospecting.

The program is being carried out in cooperation with the U.S. National Aeronautics and Space Ad-



ministration (NASA) which is in charge of the satellites.

As a first step, Argentina will participate over the next few months in a Latin-American-wide program to train technicians in the interpretation of satellite information. The National Committee for Space Investigation, a dependency of the Argentine Air Force, is in charge of the project.

### India Establishes Preserve To Protect Tibetan Crane

India will soon set up a national park at an altitude of nearly 15,000 feet—perhaps the world's highest—in the Ladakh region of Kashmir State for the preservation of the rare Tibetan crane—the least known among the 15 species of cranes in the world.

This followed the recommendation by the first ornithological expedition by Ladakh in 50 years, led by one of the world's leading ornithologists, Dr. Salim Ali, 80, who was recently awarded the 1976 World Wildlife Fund's \$50,000 J. Paul Getty Wildlife Conservation prize. The eight-week expedition covered 1,250 square miles of high altitude Ladakh, otherwise popularly known as "Little Tibet."

Salim Ali, who is the president of the Bombay Natural History Society, said he had asked for, but been refused, China's permission to visit Tibet to study the habitat of the rare Tibetan crane. He still hopes, however, that the recent exchange of ambassadors between Peking and New Delhi may cause the Chinese government eventually to grant his request.

Salim Ali told *WER* that six of the black-necked cranes were sighted by his team, one pair of which was spotted in the Chushul marshes. Because the Tibetan crane nests only in altitudes of about 15,000 feet, he has recommended that their national park be located in the Chang Thang area.

### Romania Informs UN It Will Install More Nuclear Plants

Romanian United Nations delegate Romulus Neagu in a speech to the General Assembly in New York announced that his country intends to install additional nuclear plants during the next five years capable of generating 5,000 megawatts.

He said Romania would be seeking assistance from the International Atomic Energy Agency (IAEA) in Vienna—a UN organization. He urged an expansion and liberalization of the transfer of nuclear technology among all states.

Neagu gave no details of the planned build-up. However, last December a magazine for Romanians living abroad (*Tribuna Romaniei*) said that by 1990 about 20 per cent of that country's energy would be produced by nuclear centers. It said that during the first stage—from 1976 to 1980—Romania would begin building nuclear power plants and the industrial units needed to turn out materials to be used as moderators to control reactions, cooling agents, and other equipment used in nuclear reactors.

### Mexican Church Spared Damage From Mining Blasts

One of Mexico's most famous and ornate churches has been spared damage from modern mining methods, thanks to government intervention. The Church of Santa Prisca, a popular tourist attraction on the Taxco main square, was built in 1758 by Jose de la Borda who reaped a fortune from nearby silver mines.

But this year's activities of Industrial Minera Mexico, S.A., engaged in copper, zinc, and silver mining, have threatened irreparable damage to the church. Although mines lie beyond the center of town, reverberations from blasts were shaking houses and, said Rafael Ramirez Lopez, federal tourism dele-

gate, possibly causing cracks in the carved stone walls of the church.

After an explosion exceeding three tons of dynamite, Ramirez Lopez called on the Secretary of Labor and the Secretary of National Patrimony to meet with mining executives. An agreement was reached which neither slows industrial progress nor threatens the church.

"The company said it would make no more big explosions, in the three-ton range, but would limit future blasts to about one-and-a-half tons," Ramirez Lopez said. "No one can say definitely that the cracks were caused by the explosions, but now everyone is happy."

### Thinning of Sika Deer Will Save Ireland's Red Deer

Killarney's 1,000-strong Sika Deer herd is to be reduced to one quarter of its present size in order to conserve woodland and to preserve the smaller, but more important Irish Red Deer collection in the famous Irish area of County Kerry.

It has been discovered after a scientific survey that there is no regeneration in Killarney Yew Forest, claimed to be among the finest in Western Europe because of the Japanese deer, brought to the area over a century ago.

For the past year, a study has been carried out by biologist Mr. Patrick Casement and as a result of his reports, the Irish Government agency, the Office of Public Works, has recommended that it is imperative to cull 750 Sika Deer.

The recommendations have been approved by the Kerry Deer Society. Its President, Rev. Father James Kissane, said he received the news of the culling need with "some shock," but added that the Society felt there was a need for some action and had felt this for some time.

He said: "The proposed cuts are drastic, but necessary. We fully accept the need for conservation."



## Colombia Establishes National Network To Control Flooding

Colombia's Institute of Hydrology, Meteorology and Land Reclamation (HIMAT) has signed a technical cooperation agreement with the Canadian International Development Agency to establish a national communications network to help control flooding. With Canadian aid, HIMAT will evaluate meteorological changes to enable local authorities to prevent flooding, particularly in the basins of the Magdalena and Cauca rivers.

HIMAT estimates that flooding causes \$34 million in annual property damages, an average of 130 deaths per year, and the loss of homes by some 600,000 people.

## British Find Fast Nuclear Reactor Effective And Safe

Britain's prototype "fast" nuclear reactor at Dounreay on the north coast of Scotland is now operating satisfactorily after months of technical trouble, according to Sir John Hill, chairman of the United Kingdom Atomic Energy Authority.

Sir John said the 250-MW reactor was operating at 60 per cent power at

the moment and was expected to be stepped up to full power in 1977. The next step, he added, was the ordering of a full-scale commercial fast reactor because "fast reactors are going to be a vital source of energy in the future."

"The reactor is, as expected, very smooth and stable in operation and is behaving exactly as predicted," Sir John said. He stressed that only by building a commercial fast reactor could the nuclear industry allay fears expressed about fast reactors and plutonium and show they were either greatly exaggerated or groundless. The building of such a station would take about 10 years.

Sir John said he believed Britain should scrap development of the Steam Generating Heavy Water Reactor in favor of the American light-water reactor or the development of more advanced British gas-cooled reactors. There was no doubt, he added, that these reactors could be developed to safety standards acceptable in Britain, and he referred to the authority's work on storing of radioactive waste in glass, noting that a piece of glass the size of an ashtray could store the waste resulting from one person's lifetime consumption of electricity.

He pointed out, however, that such glass storage—known as vitrification—was still 10 years away from commercial development.

## St. Lucia To Harness Thermal Energy From Live Volcano

The government of St. Lucia has taken over the full responsibility for the development of the major thermal energy project on the island as a source of cheap electricity. The plan is to harness the steam generated by the semi-active volcano, Soufriere, whose bubbling sulphur springs have been promoted for years by the St. Lucia Tourist Board as "the world's only drive-in volcano."

In late 1973, the British Government's Development Division in the Caribbean provided a grant of \$185,000 towards a survey of geothermal energy potential. This early work was carried out by the London firm of Merz & McLellan assisted by experts from the Institute of Geothermal Studies of the University of the West Indies.

Following optimistic reports, the Trinidad firm, Well Services, Ltd., moved in and made test borings. The fourth hole they sank produced a good yield of steam at a pressure of 360 PSI, at 1,033 feet. St. Lucia's current load demand amounts to some 6 MW of power and a geothermal pilot plant could produce about 2.5 MW.

Total costs to date have been about \$370,000, with estimates of up to \$5.5 million being necessary to insure the 10 MW plant capacity.

## Calendar...

**December 13-17**—Working Party on Housing (6th Session). Geneva. ECE.

**December 16-18**—Inter-Governmental Consultative Committee on Environmental Problems of Specific Industries. Paris. United Nations Environment Programme.

**December 20-23**—International Conference on Bicycle/Pedestrian Transportation. Haifa, Israel. Auspices of the Technion University of Haifa and the Society of Medicine and Law in Israel.

**January 11-14**—Seventh Session of the Working Party on Air Pollution Problems. Geneva. UN Economic Commission for Europe (ECE).

**January 1-18**—UNEP/FAO joint Seminar on Residue Utilization: Management of Agricultural and Agro-Industrial Wastes. Rome.

**January 31-February 2**—First International Cadmium Conference. San Francisco. Sponsored by The Cadmium Council, The International Lead Zinc Research Organization, The Cadmium Association of London.

**February 21-25**—Fifth Session of Senior Advisors to ECE Governments on Environmental Problems. Geneva. ECE.

**March 28-30**—The Fourth International Health Conference. Washington, D.C. Sponsored by the National Council for International Health.

**March 29-April 1**—Seminar on the Petroleum Industry and the Environment. Paris. UNEP.

**April 19-21**—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resources. Geneva.





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## Will Windscale Atomic Plant Turn Britain Into a 'Nuclear Dustbin'?

**LONDON**—The decision in early November by the planning committee of the Cumbria County Council to permit the expansion and improvement of the Windscale nuclear reprocessing plant could, in the opinion of environmentalists, turn Britain into the "nuclear dustbin" of the world. Cumbria is on the north-west coast of England, and the Windscale plant discharges into the Irish Sea.

The four-part application by British Nuclear Fuels Ltd., which operates the Windscale plant, includes plans to improve processing of existing wastes from British power stations, at present building up in the cooling ponds. It also includes plans for an oxide reprocessing plant, the real point of objection for those opposing expansion. They claim that this is a new technology, as yet unproven, and believe that British Nuclear Fuels has been underhanded in trying to include this with the other plans to be dealt with locally.

Friends of the Earth, and Half Life, two of the environmental groups involved in the issue, point out that there is already concern about the increase in radioactivity levels in the Irish Sea. Increased capacity at Windscale, particularly when used to reprocess the nuclear wastes of other countries, they say, can only lead to the sort of increase in pollution and security dangers of which the recent report of the Royal Commission on Environmental Pollution warned. It leaves several questions unanswered, such as where waste will be stored and in what form the reprocessed fuels will be returned to the country of origin.

Even groups and individuals not opposed in principle to the expansion, such as the Town and Country Planning Association, agreed with the environmentalists that the issue should be treated as a national and not a local one. Secretary of State for the Environment, Peter Shore, has been petitioned to exercise his powers to call in the application and set up a planning inquiry commission which would permit full public debate. Thus far, however, Shore has only agreed to, at some point, make a statement in the House of Commons about the issue.

Arguments on the other side, particularly the economic ones, are powerful and urgent. West Cumbria has an unemployment rate running well above the national average and several hundred jobs are involved. British nuclear technology is one of the most advanced in the world and wants to retain that position by further development. It is proud of its safety record and stand-

ards, which have been praised by the Royal Commission on Environmental Pollution.

Meanwhile, the widening debate gets ever more acrimonious. Pressure increases on Shore, Members of Parliament are being lobbied, and radio and television have taken up the issue. The people of West Cumbria are divided and feelings are running high as the national spotlight swings upon them.

ALAN MASSAM

## Greek Ministry Issues Specific Noise Pollution Legislation

**ATHENS**—The Greek Ministry of Social Welfare, expressing deep concern over increased noise pollution in Athens, has issued new anti-noise legislation. The existing three noise laws are essentially inapplicable, referring vaguely to unnecessary noise, car horn noise, and industrial noise.

George Simantonis, spokesman for the committee, said measurements made in various parts of the city revealed that "the situation is grave and needs drastic measures to tackle it."

He said the average noise level in the city's center was 72.5 decibels, while the highest level measured was 92 db near the airport.

The spokesman said a public opinion survey of 2,000 persons showed that 78 per cent of them were more disturbed by noise than atmospheric pollution, which received a 32 per cent rating. Regarding the sources of noise, 51 per cent named motorbikes and scooters as the major one, 34 per cent traffic in general, and 15 per cent construction equipment.

The spokesman added that a total of 214,000 motorbikes and scooters circulate in Athens and its suburbs "turning the city into a jungle." KYRIACOS CONDOULIS

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## Historic Environmental Treaty In Scandinavia Becomes Operative

**COPENHAGEN**—A historic treaty is now spelling out how the Scandinavian countries must behave to protect each other's environment.

The Nordic Council's Convention on the Protection of the Environment—signed in early 1974—became operative in October, obligating Denmark, Norway, Finland, and Sweden to provide compensation for activities originating on their national territory that adversely affect the environment of a Contracting State. Iceland was an observer to the signature.

The Convention applies to the discharge into streams, lakes or the sea, of solid or liquid waste, gas or any other substance, or the use of land, seabed, buildings or installations which produce an environmental nuisance as a result of the pollution of water, sand drift, air pollution, noise, vibration and changes in temperature.

Each country has established its own special authority to safeguard general environmental interests vis-a-vis nuisances arising out of harmful activities in another Contracting State. Such authorities will have the right to initiate proceedings before the competent Court or Administrative authority of another Contracting State. Even individual citizens may bring suit before their national authority for action against another country.

With the enforcement of this Convention it will now be necessary, if Denmark wants to build a new airport, that the plans and its site be discussed with Sweden as the country most likely to suffer from across-the-border air and noise pollution.

Even before this Convention came into force, there had been cooperation between the combined population of 23 million people of Denmark, Sweden, Norway, Finland, and Iceland. A typical case was of a Norwegian paper and pulp plant, from which pollution spread across the fjord to the Swedish side. Bilateral negotiations provided agreed compensation and a system for cleaning up the fjord.

The Straits between Sweden and Denmark is the subject of a special convention which provides for a program to reduce the pollution from the communal sewage both on the Swedish and Danish sides.

At next February's meeting of the Nordic Council in Helsinki, reports will be given on the bilateral agreement between Sweden and Finland on the Gulf of Bothnia, and Denmark will report its findings on water pollution arising from transport.

The fact that Denmark is now a member of the European Economic Community (EEC) does not affect its membership in the Nordic Council. In any event, the Nordic Council is working in close cooperation with the Organization for Economic Cooperation and Development (OECD), the Union for the Conservation of Nature, the United Nations Environment Programme (UNEP), and other international organizations.

CONSTANCE CORK

## Australia Moves to Preserve Fraser Island By Halting Mineral Mining

**PERTH**—The Australian Government has ordered a halt, effective December 1, to heavy mineral sands mining on Fraser Island, the world's biggest sand island off the continent's north-east coast.

Moving swiftly in response to the Fraser Island Environmental Inquiry, the Cabinet backed the report's recommendations, thus effectively cutting off about 14 per cent of Australia's rutile and nearly 10 per cent of its zircon production, 12.5 and 8 per cent respectively of world production.

The main operator is the D.M. Minerals consortium. Because of "legal restrictions" believed linked with the company's concern about revealing confidential commercial information, D.M. Minerals did not produce evidence before the inquiry.

Fraser Island is a particularly beautiful wilderness area, and its preservation has won support beyond the usual conservationists' groups. However, there are several side issues.

Foremost, perhaps, is that the no-mining decision follows a more far reaching decision to permit uranium mining, and thus is being interpreted as a trade-off to conservationists. Strategically, this would make sense since the sand miners and their families made redundant on Fraser Island have become vocal and angry, helping open up a union movement rift over conservation.

Moreover, although Queensland is governed by a Country Party government, and the federal coalition is also Right-wing, Queensland's more extreme politics have become a convenient scapegoat on occasion for federal deals.

DON LIPSCOMBE

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## World Wildlife Fund: Oil Profits For Conservation?

*SAN FRANCISCO*—The proposal that world oil production contribute to protection of the world's natural heritage received impetus at the Fourth International Congress of the World Wildlife Fund held here recently (*WER*, Nov. 22, p. 5).

The idea of each oil-producing nation contributing one cent a barrel to a global conservation fund had been advanced earlier in the UN General Assembly by Saudi Arabia, and although it was subsequently withdrawn, it nevertheless generated enthusiastic ripples through the environmental community. If unanimously supported by all nations, current world production of over 20 billion barrels a year would yield \$200 million a year for ecological advancement.

A staunch endorsement of the former Arabian proposal was put forth by a spokesman for another big oil producer, Venezuela. Diego Arrias, who as Governor of Caracas is a national cabinet member, told a luncheon audience: "I am sure my President will look on the cent-per-barrel idea as a very refreshing initiative, and will give it his support." How such a fund would be administered has not been outlined.

One prominent booster for it is Maurice F. Strong, former director of The UN Environment Programme (UNEP), now chairman of Petro-Canada, that country's leading governmental oil enterprise. An implicit move in the same direction came from the Sultanate of Oman, whose Director General of Industry, Barakal Lamki, stepped forward with a check for \$100,000—equivalent to one cent on 10 million barrels of oil—for the Wildlife Fund's current drive.

Some 700 persons from 35 nations attended the three-day conference at the St. Francis Hotel. Prominent among them was Sweden's King Carl XVI Gustaf—mentioned as a possible successor to retiring Prince Bernhard of the Netherlands as president of the Fund—and Norway's Crown Prince Harald. The 15-year-old Fund, with branches in 26 nations, is one of the principal private international ecological organizations. It works closely with the International Union for the Conservation of Nature and Natural Resources; both are headquartered at Morges, Switzerland.

The Fund's director-general, Dr. Fritz Vollmar, reported that the organization, in a succession of public appeals, had now raised and disbursed \$25 million in grants to nearly 1,600 conservation projects in 80 countries. The Fund has accumulated capital reserves of \$12 million, the income from which covers its operations and some grants.

The conference was the launching platform for a new world-wide project, an International Marine Campaign ("Save The Sea") with a funding goal of \$10 million, the most ambitious project in the organization's history. Sir Peter Scott of Britain, chairman of the Fund, said the effort was motivated by the fact that "the threat to the seas, which play a vital role in our lives, is one of the most

dangerous we face."

The project's first phase will focus on the conservation of critical areas essential to the survival and productivity of both commercial and non-commercial marine species. The program calls for fuller protective measures for the Baja California (Mexico) breeding lagoons of the California gray whale; establishment of a sanctuary in the Gulf of St. Lawrence on the U.S.-Canada border for the blue whale, largest of the genus; and creation of a sanctuary in Hawaii for the humpback whale, which was chosen as the symbol of the campaign. Other objectives are saving the vanishing Mediterranean monk seal, the seals of the Baltic and Wadden Seas in northwestern Europe, the "sea cow" dugongs and manatees of tropical waters, and the marine otter on South America's west coast; and establishment of a protected network of "green routes" comprising estuaries and wetlands along the courses of bird migrations.

A particular concern of the Fund in the months ahead will be preserving the environmental integrity of Palau, the United Nations-United States trust territory in the South Pacific that is being considered by international business interests as a multi-billion dollar oil transfer port for Japan.

Another prime topic of concern is the accelerating destruction of the world's tropical rain forests, a major source of atmospheric moisture. Preservation of the rain forests is the goal of a continuing Fund effort, launched in 1974, in which \$2 million have been expended to date.

The theme of the Congress, going far beyond the Fund's original preoccupation with wildlife, was: "The Fragile Earth: Toward Strategies of Survival."

The central concern of the World Wildlife Fund must continue to be the preservation of wildlife and wild places against ecosystem destruction," Sir Peter said in his keynote address. "But we must recognize that our achievements will be short-lived unless mankind comes to grips with the causal factors. It's a fragile earth. We must recognize its fragility and stop breaking it. Disaster lies ahead unless we change course." Changing course, he added, involved changing human attitudes, and to do that the voluntary organizations in conservation must "get together and speak with one voice, in harmony, in unison. Time must not be wasted in competition and internecine rivalry."

Robert O. Anderson, chairman of the Atlantic Richfield Company, chairing one of the conference symposia, said: "Man has reached the point of becoming very dangerous to himself, raising questions about the future of all organic life. . . . We have treated even renewable resources in a very cavalier way. We have reached a level of grossly excessive consumption. Obviously the answer is to conserve. Demand for the New Economic Order is with us much as the appeals of the Welsh coal miners were a century ago. A very painful redistribution of wealth and resources may well be the order of the day."



In a message to the Congress, UN Secretary-General Kurt Waldheim praised the Fund, along with the International Union for Conservation of Nature and Natural Resources, for "their support in carrying out the operational responsibilities they have assumed" in implementing the international conventions on Endangered Species and the World Heritage Trust.

SPECIAL DISPATCH TO WER

## First International Symposium On Industrial Wastes Held in Caracas

CARACAS—Under the aegis of the Paris-based International Association of Medicine and Biology of Environment (IAMBE), the first International Symposium on Industrial Wastes and Residues recently brought together here representatives of 27 nations, including some of the world's foremost specialists on ecotechnology—many of whom had heretofore lacked the opportunity for the direct exchange of ideas.

Among the leading participants were Dr. Rene Truhaut of France, who examined industrial wastes and public health; Dr. Pierre Recht of Luxembourg, who spoke about residues of primary industries; Prof. Georges Lambert of Switzerland, who spoke on wastes from processing industries; Prof. F. Korte of Germany, who delivered a paper on consumption industries wastes; Dr. Wesley Eckenfelder of the U.S., who reviewed food products wastes and environment; and Prof. A.K. Gupta of India, who reported on genetic hazards of pesticides.

Many of the more than 100 attending scientists stressed the need to interrelate different technologies and to apply ecotechnology on an economically inexpensive level by making the most of self-sufficiency and local empirical know-how to better utilize natural resources. They also discussed the new field of eco-engineering, which attempts to combine the disciplines of physicians, biologists, engineers, and industrialists to cope with industrial waste.

Despite the plethora of pollution problems, the delegates' mood appeared unflappable. They found much work yet to be done, and recommended the compilation of environmental bibliographies of scientific reports and the creation of international information centers to avoid duplication of research and to make information universally accessible.

The work group on Energy recognized that each country should seek its own solution to energy problems and suggested stepping up supervision of the nuclear industry to control "fission dispersion." On the other hand, the German authors of "*Radio-ecological Research in the Upper Danube*" never questioned that "nuclear power stations will be springing up in rapid succession in all industrialized countries." They foresaw the necessity in the near future of supplying "more than half the consumption of electrical power from nuclear

energy." They claimed that with the present level of technology, at least 50,000 Mw can be installed in the German sector of the Danube alone without expecting intolerable radiation exposure of the population through liquid waste exposure.

The group studying chemical industries' pollution recommended research on a world scale of "all chemical products" and pointed out that there are more than two million chemical substances which hold potential risks for man. They suggested uniform international legislation to establish margins of safety. "The only way to extract ourselves [from the problem of pollution] is by applying severe legislative measures, and by instructing the people of the world in the preservation of their own environment."

They also expressed a perhaps utopian wish to "facilitate economic means to allow the scientists of the world to study environmental problems."

On a more practical level, Bruce Halstead of the World Life Research Institute reported improved advances on effective chelation therapy of heavy metal intoxication including cadmium, mercury, lead, chromium, and thallium.

Dr. Richard Abbou, President of IAMBE, said in his closing address to the symposium that industrial development and pollution control need not be incompatible; that new technology can provide low cost solutions lending themselves to local conditions. Later, however, Dr. Abbou told *World Environment Report* that industrial economies export "dirty" technologies which do not adapt well to Third World conditions.

HILARY BRANCH  
LILI STEINHEIL

## 24 Governments Agree in Berne On Provisions for Endangered Species

BERNE—Turtle soup, tortoise shell, and turtle leather are on the way out thanks to the last-minute agreement of 24 governments at the first meeting of parties to the Convention on International Trade in Endangered Species of World Fauna and Flora.

The five-day meeting held here in November was attended by 24 of the 33 governments party to the treaty. Their aim was to review enforcement and to agree on ways of making the treaty more effective.

One of their major tasks was to consider more than 800 proposed amendments to the lists of protected animals and plants. There are two main lists: Appendix 1, species which cannot be traded internationally; and Appendix 2, species which can be traded only when monitored.

The great sea turtle battle was not resolved until the final day. It involved chiefly shifting some species from Appendix 2 to Appendix 1. The International Union for Conservation of Nature and Natural Resources (IUCN)—sponsor of this meeting—listed five of the seven sea



turtle species as being endangered, one as vulnerable, and one as rare. Australia and the Federal Republic of Germany fought against inclusion of the green turtle in Appendix 1. Ghana, Zaire, IUCN and the UN Environment Programme (UNEP) representatives argued for inclusion of all sea turtles. West Germany forced the issue to a vote—the only vote during the entire meeting.

Only West Germany, Switzerland, Australia, and Papua New Guinea voted against placing the green turtle on Appendix 1.

Thus, in three months time it will be illegal for countries party to the convention to export or import turtle soup, tortoise shell, or any other sea turtle product.

Earlier in the meeting, the delegates had agreed—without voting—on more comprehensive controls over international trade in cats, birds of prey, rhinoceroses, apes and monkeys, elephants, snakes, and certain plants.

All cat species not listed under Appendix 1 are now placed in Appendix 2. Such species as the leopard, the clouded leopard, the snow leopard, the cheetah, and the jaguar are already on Appendix 1. With trade in these animals virtually banned, there was a danger that heavy pressure would fall upon similar, but so far little traded, other cat species. By placing such unprotected cats on Appendix 2, governments acted to insure that such trade pressure would not become excessive.

The white-tailed sea eagle, the bald eagle, the imperial eagle, and the peregrine falcon have now been placed on Appendix 1 and a number of other birds of prey are now on Appendix 2.

A controversy over rhino hunting was finally resolved: all rhinos have been given protection of Appendix 1, as have the great apes and the European common otter. All other otters not on Appendix 1 have been placed on Appendix 2, as have all boas, all monkeys not on Appendix 1, and the African elephant.

There was disagreement over whether sport hunters should be allowed to take home rhino horn trophies. Much of international rhino trade is in their horn, reputed to have medicinal and aphrodisiac properties. Sport hunters claimed that certain developing African countries would lose revenue if hunters were barred from keeping trophies. But finally all governments agreed that the rhinos were an endangered species and should be given the protection of Appendix 1.

WILLIAM G. MAHONEY

## 20,000 Violent Demonstrators In W. Germany Attack Nuclear Plant

**BONN**—Start-up construction of a 1,300 Mw nuclear power plant at Brokdorf, north of Hamburg, last month touched off the biggest and most violent demonstration against the peaceful use of nuclear energy yet seen in The Federal Republic of Germany—or perhaps anywhere—resulting in 80 injuries among demonstrators. In reaction

to it, officials of Lower Saxony issued contrary statements regarding the government's energy policy, while employees of the company manufacturing the plant's major components staged a counter demonstration against the entire anti-nuclear movement.

Although two other nuclear plants in the same region have several years of trouble-free and non-polluting operation to their credit, protests over the Brokdorf project began as soon as the authorization notice was published several months ago.

To carry on preliminary work and to protect construction machinery on the site, the building contractors were forced to surround the area with barbed wire fences and a 15-foot wide ditch filled with water—both patrolled by police with guard dogs.

Immediately after ground breaking in late October, about 3,000 protestors assaulted the site but were driven back by the police without personal injury or appreciable property damage.

Then on November 13 and 14, the same group attacked again, but this time their numbers had swelled to more than 20,000. Participants had been urged to arm themselves with lemon juice and boric acid to counter the effects of tear gas and Mace, while pepper bombs and sal ammoniac were recommended as weapons against dogs. Many of the more aggressive attackers wore helmets, high boots, and heavy leather gloves.

They first moved on the building site in small, widely dispersed groups, but were driven back by water cannon and police counterattacks. Nevertheless, they managed to destroy two of the water trucks and one mobile radio station with Molotov cocktails and when they couldn't get across the 15-foot ditch, they tore beams from a nearby barn for bridging material. They finally gave up the attack after four hours into the second day. The cost of the damage to the barn and to the surrounding fields from which all crops had not yet been harvested is estimated at more than \$120,000.

On the strength of the incident, Federal Interior Minister Werner Maihofer said that changes in government policy should be considered that would allow for cancellation of authorizations to build nuclear plants if citizens of the area objected to them.

A week after the incident, 5,000 workmen at the Muelheim/Ruhr plant of Kraftwerk Union, the prime contractor for the Brokdorf plant, held a protest march against the anti-nuclear demonstrators. Carrying placards that championed nuclear energy, they condemned the anti-nuclear movement for endangering their jobs and the jobs of thousands of others. Referring to the religious service that was held in the field before the attack on the Brokdorf site, they asked "Will the pastors and students pay our pensions?"

Meanwhile, an opinion survey carried out by a Dusseldorf market research organization revealed that 77 per cent of the population has "a positive attitude" towards nuclear powered generating plants. Only 12 per cent said they were "skeptical" about them and five per cent opposed them.

J.M. BRADLEY



## In Brief...

### UNEP to Convene Conference in U.S. on The Ozone Layer

The United Nations Environment Programme (UNEP) will convene an international conference next March to discuss risks to the ozone layer resulting from atmospheric pollution. The meeting, which is to be hosted by the United States in Washington, will be attended by international, governmental, and non-governmental organizations.

Ozone plays a vital role in protecting the atmosphere from excessive ultra-violet rays emitted by the sun, and the Washington conference will stress the scientific aspects of man's impact on this ozone shield, and the need for an international strategy to tackle the global problem.

Items to be discussed will include the characteristics of the "natural" stratospheric ozone layer, health effects of ultra-violet radiation, ozone layer and aircraft emissions, comparative costs of possible alternative control strategies, and the economic and social implications of regulations to control emissions of chemicals affecting the ozone layer.

During the past few years scientists have expressed serious concern about the release into the atmosphere of substances which may deplete the ozone layer through chemical reaction. Oxides of nitrogen emitted by high-flying aircraft, and inorganic fertilizers and fluorocarbons used by refrigerants or in spray cans such as aerosols are all considered potential hazards.

### Greece Begins Construction Of Its First Nuclear Station

The Greek government, claiming it is the only way to solve the country's long-term energy needs, recently announced that the state-owned Public Power Corporation had started construction of its first nuclear station,

expected to be operational by 1986. The decision was taken following a "careful study of every possible means of exploitation of the country's energy resources."

A committee, presided over by Premier Constantine Caramanlis, excluded until the end of the century the use of any other "new source" of energy such as solar, saying that the only solution for Greece's future needs will be nuclear energy.

In addition to the nuclear plant, however, the committee also decided to continue exploitation of the country's huge deposits of lignite (brown coal) in an effort to reduce oil imports.

The country's total lignite deposits are estimated at over two billion tons, or 20 years' worth, and currently account for 44 per cent of Greece's electricity needs. Of the remainder, 41 per cent is produced with oil, and 15 per cent by hydroelectric power. The announcement said plans are underway to progressively replace oil by lignite, and to this end decided on the construction of six new plants to provide electricity.

### Bavaria Using Systematic Checks on Gasoline Quality

The Bavarian State Ministry for Environment Protection announced in Munich that it has been carrying out systematic checks to control the quality of gas sold at filling stations.

It is said that every month about 40 stations have been checked not only for the quality of the gas, but to see that it meets the descriptive labelling.

Thus far, the Ministry said, there have been 190 inspections of gas producers, importers' tank storage areas, stations, and the so-called "free" (non-brand) gas stations. The announcement stated that deviation from established limits—both for lead content and quality—was found in 10 cases. These, it added, took place chiefly when gas was being switched to meet new quality controls.

### Maltese Police Mount Drive Against Diesel Pollution

The Maltese Government has decided to use the police to campaign against air pollution. It has warned offenders that if apprehended they would be severely fined by the Courts and their driving license suspended.

The police have issued a warning to vehicle owners that diesel fumes from heavy trucks, buses, and other diesel-powered vehicles were a health risk. The police have reported that since the warning, the amount of diesel fumes had been sharply curtailed.

### Insurance Policies Against Pollution Advocated in Rio

A pollution insurance policy was advocated at the Interamerican Insurance meeting in Rio de Janeiro recently as a means of raising awareness of environmental problems.

The suggestion was made by Carlos Frederico Lopes da Motta, president of Rio's Insurance Company's syndicate at the meeting of the board of directors of the Federation of Interamerican Private Insurance and Capitalization Companies (FIDES).

"The existence of a pollution insurance policy will have the effect of making people become concerned with pollution," he said. "In essence the problem amounts to establishing a policy of civil responsibility, the objective of which would be to compensate for damages to third parties caused by pollution."

### Radioactivity Poses Threats To Rescue Operations

The International Civil Defense Organization (ICDO), headquartered in Geneva, has warned that the "proliferation of radioactive substances in medicine, scientific re-



search, and industry is posing a new threat to rescue groups." It said that "hundreds, even thousands, of institutions and industrial establishments in various countries are now working with radioactive substances."

Furthermore, the ICDO report said, radioactive substances are produced, transported, used, and finally dumped as wastes, and, therefore, "there is an accident risk at each of these stages which endangers those in contact with the substances as well as rescuers called in to intervene."

During a rescue operation, the ICDO recommended that people within the danger zone must first of all be protected and evacuated. But because rescuers themselves must also be protected, it proposed that all intervention groups plan their training and equipment to meet any radioactivity contingency, however remote.

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### Malaysia Cranks Up Five-Year Plan to Prevent Pollution

The Malaysian Ministry of Science, Technology and Environment has formulated a five-year plan on measures to prevent and overcome environmental pollution.

According to its Minister, Mr. Tan Sri Ong Kee Hui, fundamental issues relating to the environment such as location of industries, conservation and land use will be looked into under the five-year plan. Continuous survey and monitoring will also be conducted to assess the true parameters of pollution and its sources.

Agro-based industries as well as the industrial sector will be studied in order to identify the problem areas and to formulate standards for control. Subsequently, standards and other control regulations will be imposed on all polluting discharges through licensing and other administrative measures. Regarding marine pollution, a contingency plan for the control and mitigation of oil spills in the Straits of Malacca has also been prepared.

### Curb on Danube Pollution Urged by Belgrade Daily

The Belgrade daily "Politika" has called on all countries bordering the Danube to reduce pollution in the river. Otherwise, the influential paper warned, the waters of the largest European river will become useless to industry and agriculture.

The eight Danubian countries are either industrially developed or moving rapidly in that direction, the paper noted. Therefore a parallel increase in pollution is taking place. "Politika" expressed special concern over plans for more than 100 nuclear power plants to be built in the Danube Basin in the next 24 years. Waste materials from these, it warned, could not be compared to "traditional waste."

"Politika" said that consumption of Danube water is constantly increasing, chiefly due to the growing number of hydro-electric power plants on its banks. Experts claim, it said, that when the Rhine-Main-Danube Canal is completed, a large quantity of the Danube's high quality mountain water will flow into this complex, causing an ever more acute water shortage.

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### Philippines To Ration Fuel Pending an OPEC Price Hike

The Philippines has ordered the preparation of an oil conservation program that would include rationing of fuel to cope with any new oil price hike that the Organization of Petroleum Exporting Countries (OPEC) may decree in December. According to Philippine President Ferdinand Marcos, the country must save as much percentage in the consumption of oil and oil products as the increase in the price of oil.

The Philippines and other developing countries have already appealed to OPEC not to raise oil prices. However, the Third World countries have not been completely united in this appeal. During the oil

crisis of late 1973 and early 1974, the Philippines was obliged to ration fuel. Since then, the country has been tapping other fuel sources, particularly China, instead of relying completely on Arab oil. Consequently, oil imports from China are expected to be up from 400,000 tons in 1975 to 900,000 tons this year.

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### U.S. and USSR Seen Likely To Extend Environment Pact

Russell E. Train, administrator of the U.S. Environmental Protection Agency, and Soviet Chief of State Nikolai V. Podgorny agreed in Moscow last month to urge their governments to extend the 1972 Environmental Protection Agreement when it expires next May.

The agreement on cooperation in the field of environmental protection was the very first one signed at the breakthrough summit conference in May 1972 that launched the era of Soviet-American detente. At a press briefing in Moscow, Train described the pact as "far and away the largest bilateral agreement we have."

The briefing was held at the conclusion of the fifth meeting of the joint Soviet-American Committee. Among its acts was the signing of a joint migratory bird convention within the framework of the 1972 accord. It covers the snow geese which breed in Siberia and winter in California. Train observed that the birds do not "share our sense of political boundaries."

Dr. William A. Brown, executive secretary of the American delegation on the committee, commented that even if the bilateral environmental agreement could be said to favor the Soviet side, it nevertheless would have value for all. "Even if it were one way—and I emphasize that it is not," Dr. Brown said, "it is in our national interest, because it helps reduce the Soviet impact on the world's environment."

He noted that the Soviet Union was becoming more ecology-conscious, even if production continued



to enjoy priority over environmental matters. He stated that the Soviet Union will spend about \$88 billion in the next five years for environmental improvement, and noted that Soviet developments had greatly aided U.S. scientists in predicting earthquakes in the U.S.

In summary, Train said that there are 11 major areas of study under the agreement, comprising 40 projects and embracing some 150 separate activities. About 700 individual visits have been recorded thus far, about half from each side.

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### All Urban Planning in Mexico Put Under One Cabinet Post

Coordination of all of Mexico's urban planning under one federal cabinet post will be implemented by Jose Lopez Portillo, Mexico's new president. To be known as the Human Settlements Secretariat, the new office is expected to include the National Housing Fund Institute, Community Development Institute, Federal Regional Development Board, Housing Fund, State Workers Housing Fund, and the Regulating Commission for Land Ownership, and will seek to reduce the cost of urban services, locate workers' housing close to jobs and prevent the creation of shanty towns on the perimeter of cities.

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### Argentina To Build Seven New Nuclear Power Plants

Argentina now has enough uranium reserves to fuel eight nuclear power plants with a total generating capacity of 4,500 megawatts, according to a study by the state National Atomic Energy Commission.

The known reserves are 23,785 tons with potential reserves of 295,000 tons, the study said.

Argentina currently has one operating nuclear power plant with a 320 megawatt capacity. Long range

plans call for construction of seven additional plants each having a 600 megawatt capacity. The known reserves are enough to fuel these eight plants for 30 years, the normal life of a nuclear power plant.

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### Nearly Extinct Sturgeon Reappear in the Baltic

Sturgeon, a fish almost extinct in European waters, has reappeared in the Baltic, according to a report issued in Szczecin, Poland.

Fishermen from a small locality near there caught several sturgeon off-shore. Moreover, they were young sturgeon, proving this fish has begun to breed again in the Baltic Sea.

A few sturgeon have also been caught deep inland in the Vistula River, which is among the most polluted waters of Poland because of its oil refinery discharges. But these fish were found to be unfit for consumption.

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### Bavaria Builds Tunnels of Love to Guard Amorous Toads

The Bavarian Ministry for the Protection of the Environment announced in Munich recently that it is building tunnels of love for amorous toads.

The revelation came in a statement reporting the completion of its latest effort: a tunnel to help toads near the Franconian town of Forchheim reach their spawning sites safely. It said that in previous years, when the toads were forced to cross a busy highway to reach their spawning pond, thousands were killed.

The ministry said that two similar tunnels are under construction: one near Bad Toelz in southern Bavaria and a second between Murnau and Garmisch-Partenkirchen.

### Decline of Aquatic Life Found in Britain's Lakes

The Norfolk Broads (shallow lakes), on the east coast of England—one of Britain's most important wetland areas, and renowned for its leisure facilities in boating, fishing, and nature study—have become heavily polluted. Only eight of the 42 broads bear any resemblance to their former state, for now their once clear waters are clouded and green. Naturalists are concerned at the sudden acceleration over the past five years in the decline of the fish and aquatic plant life there, which was once described by Dr. Martin George, of the Nature Conservance Council (NCC), as "nothing less than dramatic."

Cooperation between statutory and voluntary bodies in the field of nature conservation has enabled the NCC to mount an experiment on Hickling Broad, parts of which are owned and parts leased by the local voluntary Norfolk Naturalists Trust.

Two circular, floating tubes with attached, convoluted rubber aprons have been anchored firmly to the water bed so that the water inside the tubes is kept free from any external sources of pollution, such as leached agricultural fertilizers or heavy boat discharges. An area of the underlying mud inside the tubes and a control area outside have been covered with netting so that they remain undisturbed by turbulence from boat propellers. If spontaneous re-growth and germination does not take place in the water within the tubes during the next year, then seeding will be carried out by hand.

At the conclusion of the three-year trial, it is hoped that the research, organized under contract by the University of East Anglia, will provide sufficient data about the causes and effects of pollution to enable palliative action to be taken.

The research project, begun in European Wetlands Year, is being watched with interest by scientists from Holland and Italy, which have the similar problem of salvaging polluted lakes.



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# World Environment Report

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## Role Urged for UNEP In Energy Vs. Environment

**NEW YORK**—The burden of pollution on the global environment from the production and use of energy by the year 2000 will be severe even if the rate of growth in energy use slows down as expected. This is the conclusion reached in a report on the impact of production and use of energy on the environment prepared for the United Nation's Environment Programme.

If the rate of growth in energy consumption for the world as a whole declines from 5.4 per cent to 3.7 per cent, according to the report, there will still be a three-fold increase in carbon dioxide emissions and thermal pollution by the year 2000, and nearly a five-fold increase in particulate emissions.

Not only that, if projected growth in nuclear power plants takes place, there will be as much as eight tons of deadly plutonium unaccounted for on a global basis.

The projections in the report are detailed in the tables on the next page.

The energy report—prepared under the direction of Dr. I. H. Usmani, a Pakistani atomic physicist—is now being analyzed by a panel of expert advisers before it's submitted to UNEP's Governing Council meeting in April. It does not yet represent official UNEP thinking. The advisers are drawn from 14 countries and 11 sister UN organizations.

**UNEP Role**—The Usmani report includes a series of recommendations regarding the role of UNEP in matters relating to energy and the environment. These recommendations are based on the thesis that, while production and use of energy causes pollution of the physical environment, the lack of it leads to "the pollution of poverty."

UNEP's role, according to Dr. Usmani's recommendations, should include action to:

Review and assess the availability and imbalance of energy resources around the world;

Evolve criteria for protecting the land against the hazards of strip mining, refineries, off-shore drilling, uranium mining;

Promote studies on the utilization of waste heat;

Evolve standards for chemical and thermal discharges from energy production and consumption;

Arrange for monitoring all pollutants arising from the production and use of energy;

Determine the "outer limits" of pollution by carbon dioxide, particulates and thermal discharge;

Lay down acceptable measures for conservation of energy in various sectors of the economy;

Arrange an independent review of the international safety standards for nuclear reactors, fuel enrichment, fabrication and reprocessing, and for storage and disposal of radioactive wastes;

Keep under review progress made on alternative energy sources and to promote the use of renewable sources of energy, particularly in isolated areas of developing countries;

*(Continued next page)*

## Scientists Turn Oily Bilge into Edible Protein

**TEL AVIV**—Two Israeli scientists claim to have developed a method for degrading oil sludge in tanker holds into edible protein, but in light of current oil prices experts doubt whether this avenue will appear attractive to many shippers.

Drs. Eugene Rosenburg and David Gutnick of Tel Aviv University have conducted experiments introducing strains of oil-feeding bacteria, urea, phosphorous and air into sludgy holds and incubating the mixture several days at temperatures in the 80°F range to produce single-cell proteins.

**Breakdown**—The breakdown of the discharge, Dr.

*(Continued next page)*

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**UNEP Energy** (continued)

Encourage improvement in the technology of the steam cycle and internal combustion engine;

Support systems analysis studies of specific problems related to the impact of energy on environment;

Consider the establishment of regional Institutes of Energy Studies.

**Nuclear Hazards**—Dr. Usmani, who was Chairman of the Pakistan Atomic Energy Commission for 11 years, told *World Environment Report* that he is particularly concerned about the consequences of the proliferation of nuclear power plants. The plutonium buildup of eight tons is fantastically large considering that only five to seven kilograms could constitute the core of a nuclear explosive device.

Furthermore, the same build-up in plant capacity will produce over 2,000 cubic meters of radioactive wastes that must be disposed of permanently in a foolproof manner.

"We cannot undertake this expansion in nuclear capacity without fully understanding these consequences," Dr. Usmani warned.

**Resource Distribution**—The report points out that, in general, the undeveloped nations are also poor in fossil fuel resources, while the reverse is true for the developed countries with a few exceptions like Japan which has a strong technology to compensate.

The best way to handle this imbalance, according to the report, is for the developed countries to embark on

a program of strict conservation, and for the poorer nations to stress the development of renewable energy resources—sunlight, windpower, animal wastes, water power, forests—as a means of bringing their populations to a reasonable level of prosperity.

Worldwide Energy Produced  
From Primary Resources  
(x 10<sup>18</sup>Joules)

Resource	1971	1980	1985	2000	2025
Coal	72	117	153	316	781
Oil	95	139	158	175	124
Gas	46	62	72	104	130
Uranium	—	13	29	94	11
Hydro	5	7	9	16	29
Total	218	338	421	705	1,075

Worldwide Pollution From Use Of  
Fossil and Nuclear Fuels  
(Million Metric Tons)

Pollutant	1971	1980	1985	2000	2025
Carbon monoxide	0.6	1	2	3	7
Sulfur dioxide	45	139	172	286	567
Nitrogen oxides	31	92	112	178	327
Hydrocarbons	1.0	1.7	2.0	2.2	4.0
Particulates	6	11	14	29	70
Thermal (10 <sup>12</sup> kwh)	59	76	91	157	344

**Oil into Protein** (continued)

Rosenburg told *World Environment Report*, is 60 per cent protein and 40 per cent blended oil—an emulsified mixture of water and microscopic oil particles that will not coagulate into a slick but can provide food for marine bacteria.

Dr. Rosenburg said the processed ballast water from a 200,000-ton tanker yields 300 tons of protein that could be dried and used as cattle feed, and 200 tons of blended oil that could be recovered and recycled.

According to Dr. Rosenburg, tankers clean their holds once a year using a dangerous process of high-pressure hosing that costs tens-of-thousands of dollars and days of lost time in dry dock. He said his process would cost about \$3,000 and take three days to break down all residual oil and clean the holds of a 200,000-ton tanker.

The scientists conducted a test inside two 20,000-ton tanks of an Israeli oil tanker. When the ballast water with the bacteria was discharged, the ship's wake remained white and frothy, Dr. Rosenburg said. When the second tank, without bacteria, was emptied, he said, "the wake turned black with oil."

**Needs Funding**—The Israeli scientists said their scheme only lacks a well-engineered method of supply-

ing the air and a processing system to extract the protein. So far, they have improvised a way to pump air from the ship's engines, but lack of money has prevented them from improving the techniques and from developing the feed facilities.

**In New York**—Dr. Donald Kahn, Exxon's senior advisor for environmental conservation, told *World Environment Report* that, while Exxon is conducting similar experiments (with the Nestle Co.), he is "skeptical of the procedure on practical grounds."

Dr. Kahn agreed with the Israeli experimenters that ballast water is a major source of oil slicks. He said, however, that major carriers practice the "load on top" method, where the sludge stays in the ship and new oil is pumped in on top of it. Only the oily water is expelled into the sea.

Dr. Kahn indicated that under the latest international treaty, segregated ballast tanks which would never contain oil will be required on all newly constructed tankers.

The Exxon advisor said that the largest ballast polluters are the approximately 20 per cent of shippers who do not practice "load on top."

"Those people aren't about to put bugs in their holds," he said.



## Irish Tighten Grip on Industrial Growth

**DUBLIN**—The State Industrial Development Authority will refuse financial grants of aid to industrial projects that do not comply with environmental standards set by the National Physical Planning Institute, *An Foras Forbartha*, and the Institute for Industrial Research and Standards.

The two institutes will examine the environmental aspects of all industrial proposals generated by the Industrial Development Authority (IDA).

Additionally, the IDA has agreed to submit all industrial development proposals involving fibers, chemicals and pharmaceuticals to the volunteer national environmental protection group, *An Taisce*, for study.

**Formal Review**—Prior to the new agreement, the IDA informally put industrial promoters in touch with *An Taisce*. Now the more formal agreement will deal with proposals in industries where there exists potential risk to the environment.

*An Taisce's* National Director, John O'Loughlin Kennedy, has stressed the need for monitoring industrial development on a continuous basis to ensure that com-

panies comply with environmental standards laid down in the planning permission. He said that enforcement procedures are inadequate because existing legislation does not give local authorities the necessary leverage to enforce planning conditions.

The president of *An Taisce* says the organization is not against properly controlled development. "What we aim for is responsible industrial development with the environment protected," said *An Taisce* president, Dr. T. J. O'Driscoll.

**Planning Policy**—While government spokesmen refuse further comment, they do acknowledge that a new national planning policy is being formulated. Indications are that the policy will particularly involve the numerous applications for oil refineries, oil exploration drilling rig construction sites and a smelter proposal.

Meanwhile, the controversy over the Bantry Bay oil spillages continues (*WER* Feb. 3, p. 1). Local authorities have begun close monitoring of Gulf Oil operations at the Whiddy Island terminal. The government is firmly committed to a harbor authority controlling Bay shipping movements, a task previously handled by Gulf.

A conference of oil pollution control officers from local government authorities is scheduled in Bantry during May.

TOM MacSWEENEY

## Special Report: China's Approach to the Environment

**HONG KONG**—The People's Republic of China is talking and doing more about its environmental problems than ever before. Although China has a large land mass (3.7 million square miles) and an agriculture-based economy, its immense population (800 million-plus) and concentration of industry along the eastern coast and in the north and northeast has resulted in pollution and other environmental problems like those plaguing industrialized nations. Pollution problems also have arisen from the fact that coal accounts for 80 to 85 per cent of the country's energy consumption.

The government of China tends not to discuss publicly its environmental problems, stressing instead measures taken to solve such problems, but it clearly is aware of and concerned about them. The best evidence of that is their decision in September, 1974 to set up an Office of Environmental Protection under the State Council. The exact responsibilities of the office have never been officially spelled out, but apparently cover the whole sweep of environmental issues.

Other evidence of China's concern about pollution is its participation in international environmental programs. China has contributed 500,000 Renminbi (RMB, equivalent to about US\$200,000) to the United Nations Environment Programme.

In 1972, China also took part in the Stockholm conference on environment and again made a \$200,000 contribution.

China has adopted a three pronged approach to dealing with its environmental problems.

### Dispersal of Population and Industrial Expansion

The growth of China's major cities is strictly controlled. China currently has 16 cities with more than one million population. To keep down the size of those cities the government is sending young people from the urban areas to take up life in the countryside. Some 10 million young people have been moved out of the cities over the past few years.

There is also a policy of encouraging development of industry throughout the various parts of the country. This is intended both to meet local industrial needs and to prevent the concentration of industry in the old industrial centers.

### Recovery and Recycle of Industrial Wastes

Probably the most unique feature of China's national environmental policy is its emphasis not

(Continued next page)



so much on the elimination of pollution itself, but on the recovery of valuable raw materials from industrial waste. A campaign aimed at "the three wastes"—liquid, solid and gaseous—has been unfolded throughout the country.

Examples of how this works are numerous. Treated municipal wastes are used for irrigation and agriculture; residue from sugar refineries is used to produce bricks; cigarette butts produce a poisonless insecticide

### Introduction of Pollution Controls

This is both a corrective and a preventive approach. China, for example, recently ordered a \$2.3 million oil pollution control system from the Sumitomo Shoji Trading Co. of Japan. The system is capable of removing 62,500 barrels of leaked oil a day from polluted waters.

The corrective approach is also reflected in the recent national conference on soot and smoke held in the Northeast China industrial center of Shenyang (Mukden).

**Major Problem**—Soot and smoke appear to be one of China's major environmental problems, due perhaps to the heavy use of coal as an energy source. The national conference on soot and smoke elimination praised Shenyang, a heavy industry center, for successfully eliminating all but a white, vaporous trace from over 55 per cent of the chimneys in its industrial areas.

But while China has been making a concerted effort to deal with environmental problems, visitors to the country report that pollution remains serious in a number of areas. Fumes emitted from

trucks, buses and other vehicles—most of them diesel powered—are conspicuous. Pollution from heavy industries like steel is reported by the visitors as worse than anything seen in the industrialized countries.

**Faulty Attitude**—Inadequate facilities and technology for better pollution control are part of the problem. But as the Chinese authorities have complained, another aspect is the attitude towards pollution.

The September 1974 issue of the Party journal "Red Flag" criticized those "who would rather spend money in compensation for agricultural losses (caused by pollution) than make an effort to control the three wastes." Clearly managers and officials with production quotas to fulfill are reluctant to divert attention and capital to pollution control if that is going to affect production.

Aside from direct efforts to control pollution, China also is actively concerned with other aspects of the environment and ecology, especially as they affect the agricultural sector. One such concern is water conservation.

**Saving Water**—Since 1966, 1.2 million pump wells have been sunk in the countryside. Each year millions of reservoirs, ponds, sluice-gates, culverts, wells, canals, ditches, and pumping stations are built. In some areas, soil improvement, land-levelling and reclamation of farmland have gone hand-in-hand with these efforts. Major State-financed projects have been carried out to better control the Yellow, Hai, Huai, Liao and other rivers to increase flood protection, expand irrigation, power generation and navigation.

ARTHUR MILLER

## Kashima—a Clean Petrochemical Center

**TOKYO**—By introducing a coordinated system of anti-pollution equipment the Japanese have developed what the country's Environmental Agency bills as one of the cleanest petrochemical centers in the world today.

This approach to pollution control is being successfully tested at Kashima in Ibaraki Prefecture, about 100 km east of Tokyo. The Kashima petrochemical complex is constructed around an ethylene plant that produces 300,000 tons annually.

Included in the complex are a thermal station generating 2.4 million kilowatts of power, an oil refinery supplying fuel and other products to 23 factories in the region, and other facilities annually churning out \$24 million worth of synthetic rubber, caustic soda, vinyl chloride, synthetic paper and a wide assortment of other chemical products.

Japanese Environmental Agency spokesmen told

*World Environment Report* that Kashima's yearly average nitrogen dioxide level was slashed in 1973 to only 0.02 ppm while the worst areas in industrial regions like Tokyo registered a 0.031 ppm reading. Kashima's annual average nitrogen monoxide levels were also reduced in 1973 to just 0.008 ppm while for comparisons, the worst regions in Tokyo registered 0.065 to 0.074 ppm.

At Kashima between 10 and 15 per cent of all plant costs are invested in elaborate anti-pollution devices including desulfurization equipment for use in burning heavy oil and for cleaning smoke and exhaust gases and the newest denitrification equipment for handling nitric acid smoke emissions.

The Environment Protection Council, an organization comprised of all the companies with factories within the complex, oversees maintenance of the system. Many of the facilities, including the fuel supply system, boilers and all automatic observation and warning equipment are owned in common by the companies involved.

A. E. CULLISON



## EEC Considering \$20-Million Nuclear Study Looks at Pulp and Paper Industry Too

**BRUSSELS**—In conjunction with its goal of increasing the use of nuclear power in the European Economic Community, the EEC Commission has just sent to the decision-making Council of Ministers a \$20-million five-year program to study radioactive waste management and storage. The Commission has also introduced legislative proposals for the pulp and paper industry, and sea and fresh water bathing.

### Nuclear Wastes

The nuclear program is designed, the Commission said, to make progress in current techniques of radioactive waste storage and disposal to cope with the proposed massive expansion in the use of nuclear energy in the coming decades. It added that "it will take at least another few decades of hard work in order to develop and try out in practice the best solutions to the problem."

This five-year program should be regarded as only a first phase. It would involve qualified public and private agencies in the member states, as well as the EEC Joint Research Center.

In addition to the current techniques of dumping at sea and encasing radioactive wastes in concrete or glass, the EEC experts suggest study in new areas and continuation of work already being conducted in the United States and

Europe. They also proposed joint studies to locate suitable underground locations for storage, research into the use of bitumen and plastic resins and the design and construction of pilot facilities such as a high-temperature incinerator to handle various types of waste contaminated by plutonium.

The largest program proposed, involving more than \$12 million of the total suggested budget, would focus on the search for the appropriate geological conditions for storage of high-activity and alpha-active waste. The report on the program said previous surveys carried out from 1963 to 1968 by the European Atomic Community were inadequate and that new joint studies should be undertaken.

### Pulp and Paper

In its pulp and paper recommendations, EEC's executive commission observed that the industry is "looked at as a matter of priority, due to the potentially high polluting nature of the manufacturing process used." It noted that although water is most directly affected by the industry, considerable air and soil pollution is also involved.

It noted that to date few of the EEC's nine member countries have drawn up legislation that could be specifically applied to the discharges of pulp mill effluents. Belgium has special legislation, France has

an industry compact and Germany is preparing financial charges on the release of noxious effluents. But the other countries have only general environmental standards.

The Commission said there are more than 200 pulp and paper plants in the EEC, mostly small ones that produce less than 50,000 tons yearly, with 75 located in Italy alone.

The proposed legislation, to be considered by the EEC's council of environment ministers, would set standards for the various types of plants for the member states to implement during a 10-year transition period. A case-by-case approach would be used in applying the standards, taking into account the impact on competitiveness and the economy.

### Bathing Waters

In proposing its legislation on water used for swimming, the Commission said that pollution of both the sea and rivers often has international and economic consequences, especially on tourism.

The Commission plan, if adopted, would require member states to comply with its suggested microbiological and physicochemical parameters within eight years. The standards would be applicable only where swimming is authorized or tolerated. As a general rule, the water samples should be taken at points where bathers are most densely grouped and preferably at a depth of 30 centimeters below the surface.

*David Fouquet*

## Venezuelan Environment Code

**CARACAS**—President Carlos Andres Perez has submitted to the Venezuelan Congress a draft "Organic Environment Law." It would set tough new standards and shift the cleanup burden onto polluters. But it leaves a loophole in favor of continuing industrialization of the country.

The bill, which would replace an earlier environmental law passed in 1973, would create a National Council for Environment charged with drafting a national plan for the protection and conservation of the environment.

The Council would report directly to the President.

The proposed law would also establish a National Office of the Environment with the legal power and financial means to enforce conservation laws, identify pollution sources, carry out research and train personnel.

The law would hold the guilty polluter responsible for correcting damage done to the environment rather than merely imposing fines or prison sentences. Companies engaged in potentially polluting operations would be required to have on their staffs a team of "environmental watchdogs."

*(Continued next page)*



The proposed law also calls for study of land use, control of urban growth and industrialization, promotion of economic decentralization and increased development of national parks, forest reserves and animal sanctuaries.

**Economic Growth**—But the draft makes a major concession in favor of Venezuela's much-touted push for industrialization and higher standard of living. The introduction to the bill states that the government considers inadmissible the concept of halting economic growth to protect the environment, and Article 21

would authorize any activities considered necessary for social or economic benefit to the nation regardless of environmental impact, provided the deterioration of the environment appears repairable.

Venezuela's solution to the quandary—economic growth vs. environmental protection—according to the President's draft bill, is to accelerate development to the point where it lifts the economically marginal population into an adequate standard of living, while supporting conservation programs at the same time.

HILARY BRANCH and LILI STEINHEIL

## Fish Processing Plants Consort To Clean Up Guanabara Bay

**RIO DE JANEIRO**—Ten major fish processing companies in the Rio area have pooled their resources in a combined effort to combat pollution of Guanabara Bay.

The ten companies—Beira Alta, Sao Goncalo, Uniao Brasileira, Gelo e Pescado, Piracema, Gradim, Sta. Iria, Ruby, Peixe and Mantuano—had all been heavily fined for polluting the bay but still found it too expensive to install pollution controls.

But a Rio consulting firm—Duncan and Duncan—showed how the companies, by working as a consortium, could mount a pilot control project for only \$4400 each, instead of the \$13,000 each it would have cost

acting individually.

Under the agreement, a portable pilot plant will be operated at each plant for 45 days in rotation. Each company will then receive a detailed design and cost estimate for a permanent installation.

Most of the equipment used in the pilot plant is made in Brazil. The plant is designed to treat the raw wastes that are now pumped into the bay, to recycle water, and to reclaim useful by-products of the processing plants.

The first stage of the pilot plant consists of a receiving and measuring tank, a retention filter for solids, a separator for fish and oil, a coagulant mixing tank, a blender, and a primary decanter and flotation tank to retain particles for use in fish meal.

The second stage includes aeration tanks, a secondary tank to take out the sludge, and a thickener.

## Pressure Mounts in Greece for Stronger Environmental Agency

**ATHENS**—The Greek government is under pressure to increase its interest in environmental issues by raising the status of its environmental protection body, currently just a low-level department within the Ministry of Culture and Sciences.

The Greek Society for Research and Control of Water, Land and Air Pollution, the most active environmental group here, has called for immediate establishment of an Environmental Protection Agency reporting directly to the Prime Minister "in order to face without

any further delay the fast-growing environmental problems of the country."

But, at a national industrial conference here in early February, industrial representatives went even further and proposed a sub-ministry charged with informing the Greek people about sources of pollution and the measures necessary to control it.

The industrialists stressed, however, that while they are prepared to undertake industrial pollution control "within reasonable boundaries," such efforts will be in vain unless the government also takes action against municipal waste discharged into the sea, traffic-related pollution, and unplanned building expansion.

## Turkey Makes Bid for Cleaner Air with Nine New Coal Refineries

**ANKARA**—Turkey's caretaker Prime Minister Sadi Irmak has declared that his administration is prepared to take the measures necessary to deal with the serious pollution problems in this country, particularly in the major cities like Ankara and Istanbul.

Premier Irmak made his remarks at a high-level meeting attended by his Minister of Power, the managers of the state-owned Research and Coal Boards, the

president of the Turkish Association for Struggle Against Pollution and other environmental experts.

The main pollution problem in Turkish cities is smoke. Most private apartment buildings and factories use local low-quality lignite coal. There has been a shift to fuel oil in recent years, but the petroleum crisis of last year and the rising price has forced many users to revert to coal.

At the meeting, it was decided to build nine new plants to refine the coal and upgrade it. Capacity will be 1.5 million tons of clean coal per year. Estimated cost of this construction is \$100 million, with completion by 1983. One such plant already exists in Turkey.



## Briefs...

### Phillipine Water Pollution

The martial law government of the Philippines has banned the dumping of wastes and other effluents in the country's waterways. The decree posts fines of up to \$1,400 and prison terms of up to one year for the discharge from any watercraft or from the shore, wharf, manufacturing firm or mill of any refuse into navigable waters or their tributaries.

Except in cases of dire emergency, the decree prohibits the discharge of oil, noxious liquid substances and other harmful substances.

### Nuclear Safety

Japan, one of the world's largest users of nuclear power plants, plans to establish a nuclear energy safety bureau within the Science and Technology Agency during the coming fiscal year which begins April 1.

### Venezuelan Coastal Conservation

During the past year Venezuelan President Carlos Andres Perez has decreed establishment of five new national parks embracing lagoons, seashore, mangroves and islands.

The 1,750 miles of coastline from the Guajira Peninsula in the west to the Orinoco Delta in the east are national property. The Ministries of Defense and Communications control a strip of land fifty meters wide along the beaches. A presidential decree last spring declared illegal all fences, walls or buildings that impede access to the beaches.

The administration has made use of old laws to halt growth of houseboat villages and to stop the bulldozing of mangroves and salt flats.

All hunting was outlawed in

Venezuela in 1974 for a period of two years. Only a few rice farmers have been exempted from this ban and have permission to use shotguns on migratory ducks. The import of firearms is strictly forbidden.

### Haitian Roads

Haiti is undergoing its first major road construction program since the US Marines occupied the Caribbean Republic in the 1920's. Haiti today has virtually no surface transportation between its major cities because lack of routine maintenance has caused disintegration of the roads built by the Marines.

Inadequate transportation has severely impeded Haiti's growth and has cut off major scenic areas from tourists, a major source of the island's revenues.

Now, the United States, France and the World Bank have made available low-cost, long-term loans and have contributed equipment. The vast road construction project is underway, and is expected to take four or five years and cost \$500 million.

The US Agency for International Development (AID) has started a road maintenance program, training Haitians in the field and also supplying construction and maintenance equipment.

### Sofia Switches to Central Gas Heating

Bulgarian officials have approved a huge project to build a unified central heating system for all districts in the old part of Sofia and its surrounding new suburbs. This project will mean a complete switch-over from wood and inexpensive lignite coal as the chief source of heat to natural gas, beginning in 1976 and ending in 1980.

The plan is based on completion

of the southern branch of the international gas pipeline that starts in the Soviet Union, and passes through Romania to serve Bulgaria. By 1978, three billion cubic meters per year will be available to Bulgaria.

Sofia will endure torn-up streets for years to allow laying of new central heating water lines, high-pressure gas lines, and new electrical conduits.

The switchover will involve over 700,000 people living in over 200,000 dwelling units.

### Noise Control With Waste Plastics

The Temaforg company of Budapest claims a new method of recycling waste thermoplastics into heat- and sound-insulating slabs. The waste is pressed into a band of uniform thickness, bonded through heating, pressed into a wafer surface pattern and trimmed into flexible or rigid slabs.

The product is called Temizol and is already in use in construction to insulate floor slabs and roofs. Tests in housing projects, according to the company, show a 15-decibel sound reduction.

The company has patents in several countries and is negotiating licenses with other firms in Austria, England and West Germany.

### Peruvian Wins Wildlife Award

Peru's leading conservationist, Felipe Benavides, has been presented with the World Wildlife Fund's \$50,000 J. Paul Getty Wildlife Conservation Prize.

The award was made possible by a gift from Getty to the World Wildlife Fund and is intended to recognize outstanding achievement of service in the field of conservation.

In Peru, Benavides is synonymous with conservation. He is the president and founder of the Peru-



vian Zoological Association, the Lima Zoo, and the Peruvian World Wildlife Fund Appeal, PRODENA.

Benavides' 20-year successful struggle to save the vicuna from extinction was noted in the Wildlife Fund's citation, as was his fight to stop the killing of blue whales.

**Magnesium Bisulfite**

Austria's leading cellulose and synthetic fiber manufacturing company—Chemiefaser Lenzing A.G.—has patented a process for recovering 85 per cent of the magnesium oxide and 70 per cent of the sulfur charged into its chemical fiber manufacturing process.

A three-stage pressure filter system neutralizes from 99 to 99.5 per

cent of the waste caustic volume (at two-thirds capacity).

**Liberian Food**

The Liberian government has begun a campaign against spoiled and outdated foodstuffs sold in local markets. According to the Commerce Ministry, some foods which are prohibited from sale in their countries of origin are dumped in Liberia and sold at cheap prices.

The Ministry is meeting with food importers to admonish them and bring them into line with the government's new regulations on imported foodstuffs. Under the regulations, all imports must pass standard tests in the country of origin before they are allowed into Liberia, and any new brand foods must be ap-

proved by the Ministry before they are marketed.

**Czech River**

The management of two automobile factories in Northern Bohemia (one of the Czech Republics) are credited, according to CTK, the Czechoslovak news agency, with having restored the purity of the Jizera River to the level it had in 1921, before the area was industrialized.

The Skoda auto works in Mlada Boleslav and the Liaz plant in Liberec installed effluent filters over the past decade that now capture more than 85 per cent of all the solid and liquid wastes produced by these two metallurgical operations, according to CTK.

**Calendar of Meetings, Seminars and Events**

March 10-14—65th Session of the FAO Council, Rome.

March 14-19—International Anti-Pollution Exhibition, Tokyo, at Tokyo International Trade Center. Contact Nihon Kogyo Shimbun Co., 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100 (Tel: 03-231-7111).

March 17-21—International Symposium on the Use of High-Level Radiation in Waste Treatment—Status and Prospects, Munich, sponsored by International Atomic Energy Agency.

March 17-10 May—United Nations Third Law of the Sea Conference, Geneva.

March 19-21—Pulp & Paper Seminar, Paris, sponsored by United Nations Environment Programme. First in series of industry seminars. Similar seminars planned for aluminum producers in September, for auto industry late 1975.

April 7-9—Symposium, "The Oil Industry—One International Community Member in the Environment," Teheran, sponsored by International Petroleum Industry Environmental Conservation Association. Contact Mr. Featherstone, IPIECA, 110 Euston Rd., London NW 1, 2DP.

April 7-11—26th Session of Inter-governmental Maritime Consultative Organization's Legal Committee, London.

April 14-18—International Symposium on Reliability of Nuclear Power Plants, Innsbruck, Austria.

April 23-25—Water Management Sector Group meeting, Paris, sponsored by Organization for Economic Cooperation and Development.

May—Second Council of Europe meeting to exchange information on national regulations and practices regarding air pollution, Strasbourg, sponsored by UNEP.

May 7-10—"Conference on Population Growth and Rural Development," Kampala, Uganda, sponsored by Eastern Africa Agricultural Economic Society.

May 13-16—Third International Ocean Development Conference, Tokyo.

May 26-28—World Energy Conference, Copenhagen.

June 2-7—The Baltic and International Maritime Conference, Helsinki.

June 2-6—International Symposium on the Combined Effects of Radioactive, Non-Radioactive and Thermal Releases to the Environment, Stockholm.

June 5-8—"Earthcare," conference on the preservation of natural areas and urban open spaces, New York, sponsored by Sierra Club and National Audubon Society.

For further information, contact the Center for International Environment Information.





# World Environment Report

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## COASTAL STATES AGREE ON ACTION PLAN TO PROTECT THE MEDITERRANEAN

**BARCELONA**—Sixteen countries have overcome their differences to agree on a long-term comprehensive plan to protect the Mediterranean. They reached this accord at a meeting convened here by the United Nations Environment Programme (UNEP) from Jan. 28 to Feb. 4 (*WER*, Feb. 3, p. 4).

Within hours of the meeting's opening by Maurice Strong, UNEP's Executive Director, it became clear that everyone had come to Barcelona to get down to business. Given the present state of political tensions in parts of the Mediterranean region, UNEP officials found it remarkable—and heartening—that problems not directly related to the substantive agenda did not arise.

Much credit was given to the president of the conference, Spanish Deputy Minister for Planning Fernando de Ybarra, who guided the opening plenary session through its entire general debate in only one session, and thereafter oversaw committee work.

▲ **Action Plan**—The action plan adopted by the meeting was based on three substantive papers presented by UNEP—on planning and development, on monitoring and research, and on a draft convention and protocols. It calls for:

- A co-ordinated programme to incorporate environmental safeguards in long-term development of the Mediterranean region. Detailed information will be developed on such specifics as waste treatment, protection of soils, recycling of fresh water, aquaculture, economics, and the environmental aspects of tourism and industry development. UNEP is to draw up an inventory of developing country needs and the available training possibilities. Overall purpose of this programme is optimum development of resources coupled with improvement of environmental quality.

- Continuing assessment through monitoring and research. UNEP is to organize pilot projects and a coastal water quality control programme in cooperation with the appropriate agencies and international organizations. UNEP will also provide assistance in the form of training and additional equipment.

- A legal basis for regional cooperation. UNEP, together with the Food and Agriculture Organization (FAO) is to convene a Barcelona Plenipotentiary Conference ("Barcelona II") early in 1976 to reach agreement on an overall framework convention together with at least two protocols on specific aspects—pollution from dumping and cooperation on massive oil spills. Additional protocols on land-based pollution and protection of seabed activities are

requested as soon as practicable. It was also agreed to seek to have the Mediterranean designated a "special area" with regard to "noxious liquid substances" under the 1973 Convention of the Inter-Governmental Maritime Consultative Organization (IMCO).

To put these recommendations into effect, the meeting called on UNEP to use the financial resources already available to it, to continue its coordinating role and to strengthen appropriate existing institutions in the region and help them cooperate on common tasks.

▲ **Oil Spills**—Malta stole the jump on the other delegations with a well-prepared proposal for a regional center to cope with massive oil spills, which many fear will increase as traffic resumes through the Suez Canal. The meeting agreed that the Executive Director should consult soon with Mediterranean governments on setting up such a center.

It became apparent during the meeting that similar offers can soon be expected from other states which want to make sure their own institutions participate actively.

▲ **The Groundwork**—UNEP began active preparation for the Barcelona meeting only in September of 1974, but its presentation was based largely on work that had already gone on in the UN system. An Intergovernmental Working Group on Marine Pollution met in London in 1971 and called for a regional approach to marine pollution. Ten Mediterranean states issued a statement at that meeting. Later the same group met in Canada and agreed on a statement for presentation at the 1972 Stockholm environment conference.

At Stockholm, the governments agreed to these recommendations and laid special stress on the need to identify and control all sources of marine pollution. This was followed by the London Ocean Dumping Convention of 1972 and

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the IMCO Convention of 1973. The convention and protocols presented at Barcelona were developed mainly at FAO and UNEP workshops during 1974.

The significance of the Barcelona meeting lies in the action plan approved by governments.

- They have agreed to set in motion steps that will lead to an accurate picture of the state of the Mediterranean in terms that are meaningful to national decision makers.

- They have agreed to develop a legal basis which will progressively bind states of the region—and in some cases outside states—to cooperate to protect the marine environment.

By establishing specific objectives and identifying priorities, the Barcelona action plan provides the basis for integrating activities that are now widespread and also for ini-

tiating new steps to develop the knowledge and tools needed to protect and improve the environment in this region.

▲ **Meeting of Mayors**—An example of the conference's impact was the closing toasts of Barcelona's Mayor, Enrique Maso Vasquez, who offered to organize a meeting of mayors of the major Mediterranean cities so they can act together on such problems as municipal sewage disposal and on legal and administrative approaches.

Difficult political, economic and technical problems remain, but the states that met at Barcelona have shown their determination to put their difficulties aside as they tackle the problem that unites them—the protection of the Mediterranean.

*Peter Thacher*  
UNEP

## BROAD ATTACK ON HONG KONG'S POLLUTION

**HONG KONG**—The first team of experts arrived here in late January to begin preparing a comprehensive environmental legislation package for the colony.

The 18-month study being conducted by the British firm, Environment Resources Ltd., will concentrate on all aspects of pollution — land, sea, air and noise — at a cost to the Hong Kong government of \$250,000.

"Nowhere else has a study been carried out considering all aspects of pollution simultaneously with a view to preparing comprehensive legislation and control mechanisms," Hong Kong's Deputy Secretary for the Environment, Alan Armstrong-Wright said.

In a related development, the entire Hong Kong area, including Kowloon and the new territories, has been officially declared a smoke control area in a government move against industrial and commercial air pollution. About 50 area schools are taking part in a windpattern study program. Rank Xerox Corp is providing the project with booklets.

## BRAZIL OFFICIALS TURN DEAF EAR TO NOISE ABATEMENT DEMANDS

**RIO DE JANEIRO**—Brazil's two largest cities are among the noisiest in the world.

São Paulo, a rapidly growing industrial and commercial center with a metropolitan population of around eight million, is the noisiest city in Latin America — maybe even the world. The average decibel count in the downtown area is 105, well above the 85 that is considered safe for humans.

Beautiful Rio has four million inhabitants and while the noise level here is lower than in São Paulo, 98, experts still consider it much too high.

Inside Rio's beach area apartments the noise register can read a maximum-for-safety 85 db. In the downtown area the needle shoots up to 100. Screeching construction equipment brings the register up to 105 and a bus with a faulty muffler — of which there are hundreds — boosts the needle up to 108. A jet taking off in the centrally located Santos Dumont Airport registers 115 db.

The most frightening statistic, according to Rio noise inspectors is the average annual decibel increase. In the last few years it has increased two counts every 12 months.

Experts warn that if nothing is done soon, the noise level will become insupportable for the human ear and in the 1980's Rio and São Paulo might become cities of the deaf.

Brazil has a tough "Silence Law" but it is largely ignored, and the few overworked noise inspectors cannot begin to cope with the problem. Although there are frequent noise scare stories in the press and complaints from the populace it is unlikely that the Silence Law will be enforced or that any new noise control legislation will be enacted in the near future.

In the midst of an unprecedented industrial development, Brazilian government planners claim they have neither time nor money to tackle noise pollution. Some high level officials here see noise as the sound effect of industrialization and therefore a necessary evil that this country has to put up with in its pursuit of progress.

*George Hawrylyshyn*  
Brazil

## EEC SEEKS WAYS TO BREAK THE OIL HABIT

**BRUSSELS**—By 1985 the European Economic Community expects to be producing from its own resources more than half of the energy it consumes, according to the new energy policy adopted by the Community's Council of Ministers.

Several measures will be taken simultaneously in the Community's attempt to become less dependent on imported oil. The Council predicts that by 1985 electricity will account for 35 per cent of EEC energy supplies and the use of natural gas will be restricted as far as possible to power stations.

The EEC expects to be producing at least 175 million tons oil equivalent (Mtoe) in natural gas by 1985. The production of hydroelectric and geothermic energy will be stepped up to a capacity of 45 Mtoe.

The Community is seriously considering the harnessing of solar energy to provide electricity. The amount of solar energy available to the Community represents about 150 times its total consumption of primary energy. The EEC has expressed deep interest in solar cells.

Additionally, EEC plans call for an eight-fold increase in use of nuclear energy and a 50 per cent cut in use of solid fuels.





## MECHANICS IN MOTION FOR UNEP'S INTERNATIONAL REFERRAL SYSTEM

**NEW YORK**—Real progress has been made toward starting up the International Referral System for Sources of Environmental Information (IRS), according to U.S. representatives just returned from Nairobi. IRS is a major project of the United Nations Environment Programme (UNEP).

The January meeting was for "Focal Point Managers" who will be operating IRS centers within their own countries. It was held to enable these experts to get together, exchange ideas and formulate recommendations for UNEP.

▲ **Stockholm Conference**—The idea for IRS came out of the 1972 Stockholm Conference on the Environment. It became obvious at Stockholm that there is a wealth of information and experience on environmental problems, but it exists for the most part in piece-meal form in the developed countries and is not readily available to the developing countries that need it most.

Therefore, the Conference recommended that the Secretary General (of the UN) "take the appropriate steps . . . to organize an International Referral Service . . ." This concept was endorsed at UNEP's first Governing Council, which authorized the Executive Director, Maurice Strong, to initiate the service.

This service was to be set up so as to enable potential users, especially those in developing countries, to have ready access to information and to be aware of the interdependence of environmental problems.

The British were the prime movers in developing the IRS concept and, as the service has now evolved, it is based mainly on an outline drawn up by J.E. Peachey of the British Department of the Environment.

It was agreed from the outset that IRS should not attempt to be a full-scale data bank. Rather, it should be a mechanism to interconnect users and sources of information — a "Yellow Pages" that would give the user a selected listing of those sources of information most able to satisfy his needs for information.

▲ **Staffing Problems**—IRS has a central office at UNEP headquarters in Nairobi and a satellite operation in Geneva to take advantage of the UN's International Computer Center there. The budget for the two years beginning August 1, 1974 is \$1.14 million.

IRS falls under the general jurisdiction of Dr. Hans P. Mollenhauer, recently named director of UNEP's Division of Geophysics, Global Pollution and Health (*WER*, Feb. 3, p. 7). But it does not yet have its own director, nor has the central office been entirely staffed — a state of affairs that has been strongly criticized by some governments.

Despite this, considerable progress has been made, through a series of intergovernmental expert meetings, toward getting the mechanism in motion.

▲ **National Systems**—The first step needed to set up an environmental information system is to find out who has such information and what the capability is for delivering it. IRS has therefore been a means for both identifying existing and encouraging new national information referral systems, and it is becoming in essence the sum of a number of such systems linked together.

IRS, therefore, depends on cooperation by governments in setting up national focal points that collect and analyze data on environmental information sources within a country

or region. It is also planned to establish regional focal points related to such groupings as the EEC (Common Market) and COMECON (the Eastern European bloc), and sectoral focal points related to such centers as the other UN organizations.

The second requirement is to put the data into an internationally standardized form that can be recorded on computer tapes so that it can be queried in the same way either through the national center or through IRS itself.

▲ **Easy Coding**—Much work has gone into drawing up an agreed list of topics — or "attributes" — that will allow easy coding of both questions and information sources. A working team of experts from Australia, Canada, France, the Soviet Union, the UK and the US spent much of November and December in Nairobi refining this list of attributes.

The team also developed a final IRS Input Form, Source Guide, User's Guide and a Focal Point Manager's Guide (except for technical specifications) and recommended immediate production of this material in all the working languages of IRS — English, French, Spanish and Russian.

When a question is received at a national focal point, it will be coded and used to search the national directory for sources within the country, and a list of such sources will be transmitted to the questioner. If necessary, the question can also be referred to the international directory. In this case, however, contact will flow from the questioner through the national focal points and to the sources in other countries, rather than directly from questioner to source.

It is being left up to the individual countries to define their own focal points and to define the kinds of information sources to be listed.

▲ **US Committee**—In the US, rather than designating one agency as focal point, the State Department has appointed a focal point committee with representatives from the Environmental Protection Agency, the Library of Congress, the National Oceanographic and Atmospheric Administration (NOAA), the Departments of Commerce, State, Interior and Housing and Urban Development, and, from the private sector, the Chamber of Commerce and the Center for International Environment Information. The committee is chaired by Melvin Day of the National Library of Medicine.

At the outset, US sources listed with IRS will include only those agencies in the business of providing information, such as government agencies and trade associations, and not commercial sources such as equipment suppliers or consultant firms.

Dolores Gregory, of EPA's International Division and a committee member, told *WER* that the January meeting of Focal Point Managers in Nairobi identified three categories of IRS countries: (1) countries such as West Germany, the UK, Canada, Sweden and the US that already have operating national environmental information systems; (2) countries that have the information capability and could easily develop focal points with some guidance; (3) developing countries that have no information capability and will have to start from scratch.

▲ **UNEP Aid**—The meeting recommended UNEP concentrate on this last group and provide guidance on setting up systems and allocating resources and manpower. UNEP will train managers and information specialists for these coun-



tries and will set up model focal points, one designed to require the minimum in automatic equipment and technical expertise and one designed for a medium level of technology.

The Government of Kenya offered to provide training facilities for UNEP.

All countries that already have focal points will soon receive the IRS manual for developing the national inventory,

along with the required Input Forms. These countries will develop their inventories and provide them to UNEP.

The US and Canada have already started compiling their inventories. The US committee, for example, has underway a pilot inventory of NOAA and EPA. Once this is complete, other government agencies will be surveyed, followed by the private sector.

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## PANEL PANS UNILATERAL US POLICIES AND CALLS FOR UN SCIENCE ADVISOR

A United Nations Association policy panel has issued a call for the appointment of a science advisor to the UN Secretary-General and has characterized the United States' goal of energy independence by 1980 as illusory.

In an 88-page report, the blue-ribbon panel of 24 corporate executives, scientists and academicians says that the world is poorly organized to apply science and technology to urgent international problems of resources and development. It also questions the seriousness of US commitment to resource conservation and criticizes past unilateral US policies.

*Science and Technology in an Era of Interdependence*, the result of two years of study, says, "The U.S. has taken certain actions, such as the unilateral embargo on soybean shipments in 1973 and the call for energy independence by 1980, which serve narrow autarkic ends and seem likely to impede rather than enhance international cooperation."

In future years, the report says, international organizations will be called upon to shoulder greater responsibility.

"We are convinced that nations must have a clearer per-

ception of their unique responsibilities toward one another, and of the way in which these responsibilities interact," the report says. "Only on such a basis—rather than on the basis of rigid concepts of national sovereignty—can responsible and effective international institutions be developed," the report concludes.

The panel expresses concern that an appointed science advisor to the UN Secretary-General might be powerless unless the post is allocated sufficient resources to allow it global scope and unless the appointee has sufficient technical stature and political savvy to relate science to nontechnical policymakers in a workable manner.

The panel, chaired by Franklin A. Lindsay, president of Itek Corp., additionally calls for the establishment of global watchdog units to warn of impending environmental hazards, and the creation of an international institute to coordinate investigations on specific world problems such as developing simple energy sources for poor economies and diversifying fertilizer production.

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## ENVIRONMENT WATCHDOG FOR GHANA

**ACCRA, Ghana**—The government of Ghana has established an Environmental Protection Council as a watchdog to ensure that proper safeguards are observed in planning and executing development projects.

The 14-person council is mainly "a coordinating and catalytic body within the total effort of the entire nation in transforming the environment," the council chairman, Professor E. A. Boateng, said.

According to Boateng, the council's primary concern is the "unsanitary and slovenly individual habits in the area of human waste and garbage disposal, especially in the large over-crowded urban centers where open gutters meant for rainy season drainage are used as sewers, and central points are turned into refuse dumps without adequate protection."

It is fairly common for homes in urban centers to be invaded by maggots from nearby latrines (as occurred in Nima, a suburb of Accra.)

▲ **Textile Wastes**—The disposal of industrial waste is the council's second concern. "Although Ghana's environmental problems have not reached the staggering proportions of other countries, the country is still faced with glaring and potentially dangerous problems which could get out of control," Dr. Letitia Obeng, head of Aquatic Biology at the University of Ghana, said. The Akosombo Textile Factory "has been doing its best to kill off the fauna of the Volta below the factory," she added.

Obeng's charges are substantiated by a report by the

Council for Scientific and Industrial Research (CSIR) which also points out that other companies are equally guilty. Tata Brewery's waste disposal system near Accra is "inefficient and poses health hazards which resulted from pollution of the Odaw River drainage system with waste," the report says.

The report recommends to the government that proper and efficient disposal systems be made compulsory for all new industry, such as paper and pulp manufacturers and chemical plants. It also recommends an extensive education program directed at local farmers, forest workers and motorists as to the ecological dangers of their current practices.

Obeng points out that these problems will increase with no authority to take action against polluters. Moreover, the government itself is under fire from the CSIR for its negligent care of the environment.

P. K. Cobbinah-Essem  
Ghana

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## EAST GERMANS TREAT WEST BERLIN SEWAGE

**WEST BERLIN**—East Germany has signed an agreement whereby West Berlin will pipe its sewage across the state line to East German waste-treatment plants.

The agreement became effective January 1. Berlin will pay for processing while the East German authorities will guarantee a high degree of purification and the avoidance of air or water pollution.



## MAIN IMPACT OF COLOMBIAN ENVIRONMENT CODE WILL FALL ON INDUSTRY

**BOGOTA**—The Colombian wildlife service—INDERENA—has established a five-year plan to execute the country's new ecological code (*WER*, Feb. 3, p. 2) signed by President Alfonso Lopez Michelsen last December.

Although they are sceptical about implementation, conservationists describe the code as "the most important ecological measure of this century." The code updates legislation written in 1863 by establishing a series of prohibitions against industrial pollution and the haphazard destruction of the environment (e.g., the Colombians destroy 250,000 acres of forest every year).

▲ **Impact Studies**—The code stipulates that environmental impact studies will be necessary to obtain a license to build an industrial plant or any other construction that "might seriously alter the environment." It also prohibits unauthorized garbage dumping and urges installation(s) for recycling industrial waste.

Foreign and local companies can now exploit mineral and petroleum deposits only if they follow the code's guidelines to prevent water pollution and scarring of the landscape. Petroleum seepage and maintenance of tankers while in Colombian waters also are covered.

The code prohibits air and noise pollution that "cause the community illness or annoy the populace" and forbids "the importation, assembly or production of vehicles or other forms of transport that endanger the environment."

It also establishes traffic restrictions and authorizes INDERENA to set up laboratories to monitor air pollution.

▲ **Waterways**—The code increases the state Hydrology Institute's authority to conduct studies of Colombian waterways and construct defenses for their conservation. The institute is authorized to take a census of the water and forests on private lands and to classify the country's water resources, setting norms for their use after chemical and biological analysis.

No one may alter the course or quality of the rivers, and no construction will be authorized that endangers the community's use of these waters for drinking and bathing. Sewage systems will be strictly controlled and, where necessary, rebuilt. Special emphasis is placed on the conservation of waters for human consumption and food production, fishing areas, falls and lakes.

All architect's plans, whether for a house or an industrial plant, must include a detailed description of the sewage system to be installed. The location of industries will depend on the degree of pollution they produce. And private property owners are enjoined to follow the suggestions made by the government's ecological inspectors.

The code also establishes prohibitions against the manufacture of toxic chemicals dangerous to the environment and places stricter controls on fishing and hunting.

▲ **Incentives**—To encourage conservation, the new legislation offers economic incentives, such as tariff reductions for the import of anti-pollution equipment, although these incentives are not yet spelled out. Like other articles of the code dealing with prohibitions or authorizations to state institutes, the incentives will be detailed later in a series of complementary laws to be written by INDERENA.

Colombian ecologists are skeptical that the government can enforce all of the code, particularly in the case of individuals, such as home owners or fisherman. "INDERENA would need an army to make these new regulations stick," said a Colombian oceanographer, "and it does not even have the money to pay the few employees it already has."

Colombians also doubt that the government will be able to control water supplies and sewage disposal, at least in the short run, due to lack of money. For example, the inhabitants of Barrancabermeja, the country's oil capital, have been protesting the city's lack of potable water by closing down commercial and industrial operations during the past month. But the government points out that Barrancabermeja, like every other city in Colombia, has a multitude of problems, and water is only one of them.

On the other hand, large projects needing government authorization will be liable to pollution controls. For example, the government currently is studying the best ecological alternatives to develop large coal deposits on the Guajira Peninsula in northeastern Colombia. The Colombian congress also has taken an interest in ecological affairs and currently is protesting the construction of a detergent plant by the state oil company near the Magdalena River, Colombia's most important waterway.

*Penny Lernoux  
Colombia*

## ALGERIA IS PLANTING A FOREST TO STOP THE ADVANCING SAHARA

**ALGIERS**—In 1974 Algeria began a long-term project which, if successful, will stop the inexorable advance of the Sahara Desert and create a forest barrier to save the country's threatened arable land.

The Algerians hope eventually to change the climate and vegetation in their desolate steppe areas.

▲ **Desert Was Once Green**—Ancient rock paintings in the Tassili Mountains in the southern Sahara show a rich country, watered by rivers, covered with trees and plants and with a large variety of fauna. But other paintings show herds of domestic animals which are perhaps the origin of the disaster that has reached the Sahel and now threatens the Maghreb countries (Morocco, Tunisia, Algeria).

Overgrazing, goat herding, burning off the forest cover to clear for cultivation (still practiced in Algeria) led to

gradual loss of vegetation cover, accompanied by inevitable climate changes. The rivers dried up, the animals and herders left, and in the Tassili today there is only one live cedar tree.

Five-sixths of Algeria is now desert and, of the remaining sixth, some 35,000 hectares of precious soil is washed into the sea every year in the rainy season for lack of forests to hold it back.

▲ **Green Barrier**—The Algerian government decided to erect a 950-mile-long belt of trees—a "Green Barrier"—varying from three and a half to 15 miles wide running south of the Atlas and Aures Mountains from Morocco in the east to Tunisia in the west.

The project will take at least 20 years at a projected cost of \$100 million. It will mobilize 100,000 workers every year. If it is successful, a huge forest will separate the Sahara



from the rest of Algeria by the end of the century. The green barrier itself will cover more than 3 million hectares and will allow reclamation of more than 18 million hectares (nearly 70,000 sq. mi.), mostly in the high plains. Two thirds of this will be arable and the remaining third pastoral. The country today has 4 million hectares of arable and 6 million of pastoral land.

Algeria plans to organize its stock raising and severely limit its goat population to prevent overgrazing. This will be a long-term project requiring a change in ingrained customs and mentality.

▲ **Army to Do Job**—Implementation of this grandiose project has been entrusted to young servicemen in the Algerian National People's Army, who are also building the Algerian section of the Trans-Saharan highway.

The project will use existing remnants of forest cover around which the new plantations will spread. Forest rings will be built around agricultural communities to protect and improve their production.

The first pilot forest planting project was launched last August by Colonel Abdelhamid Latreche, General Secretary of the Algerian Defense Ministry, at Tadmait, near Djelfa, 220 miles south of Algiers. Actual planting began in October to coincide with the fall rains, which turned out to be

inadequate. Other pilot areas chosen are El Bayadh, south of Oran in western Algeria, Barika, south of Batna in the Aures Mountains and Tebessa, near the Tunisian frontier.

▲ **Seedling Production**—Trees chosen for the planting are mainly Eucalyptus and Aleppo pine, which are the most suitable for the poor soil and difficult climate. More than 6 billion seedling trees will be planted.

The seedlings are being grown in nurseries in Algeria and imported from France, Italy, Yugoslavia and Spain. Out of the total cost, \$1 million per year is allocated for creating and maintaining nurseries in Algeria.

During the first years of the project, additional water will be needed for the young trees. Wells have been dug, canals and pipelines installed. Reservoirs and water trucks will also be used. The Army has already spent two years on preparing the project—building roads, cleaning out silted canals, digging wells, installing camps in areas destined for forestation.

Besides the Army, the Ministries of Agriculture, Planning and Hydraulics are participating, as well as local authorities who will provide some of the labor.

*Eirene Furness  
Algeria*

## CLEANING UP THE BARRIOS OF CARACAS

**CARACAS**—Governor Diego Arria has instituted a multi-million dollar campaign to clean up the *barrios* on the hills surrounding this chaotic capital city.

Arria's administration pays eight cents for each 15-pound load of garbage delivered to collection trucks at a depot at the foot of the hills. The program, now operating in 22 *barrios* with a total estimated population of 300,000, collects some 198 tons of garbage each week.

Previous administrations tried to cope with the *barrio ranchos*, or shacks, by decorating them, but the generally erratic pattern of growth has impaired attempts to provide even basic services.

"No matter how much is cleaned up, the important thing is not to dirty," Arria says. He has had *barrio* underpasses, walls of empty lots and backs of old buildings painted and decorated. The people of the *barrios* seem to be getting his message. Graffiti have not yet disfigured the painted designs of clouds, trees, horses, sun and waves, and no signs have been posted over the artwork.

## FARMERS RECLAIM ANCIENT INCA SYSTEM

**LIMA, Peru**—Centuries ago, the Incas constructed a vast irrigation system to divert water from streams high in the Andes to terraced farmlands below. It was one of the most sophisticated agricultural systems ever devised.

When the Incas were driven out by the Spanish conquerors, their farmlands fell into disuse. The water system remains however, and with land at a premium in modern Peru, farmers are beginning to reclaim the Inca lands.

Inca hydraulic engineering was a vast technological effort, with thousands of terraces and intricate stonework irrigation canals carved into mountaintops along the entire Urubamba River Valley — the "Sacred Valley of the Incas."

No water or land was wasted by the Incas, who built their system to prevent land erosion and flooding.

Today, engineers and architects from Peru's Center for the Restoration of Historic Properties are helping farmers along the Urubamba to clear the terraces, clean out earth and brush from the old irrigation canals, repair the stonework, and channel streams into the canals. Progress is slow but the farmers hope to uncover the entire network, which stretches over thousands of hectares.

The reclaimed lands are being planted with corn, potatoes, wheat, fruit trees and other crops, and mountainsides that have been brown for centuries are verdant again.

## ICELANDIC TOWN RISES OUT OF ITS ASHES

**REYKJAVIK, Iceland**—Nearly two years ago, the entire population of 5,200 was safely evacuated overnight from Heimaey in Iceland's Westman Island chain when a volcano erupted that destroyed and smothered the village.

But by last Christmas, the island community was almost back to normal, thanks to the massive effort financed by Icelandic and international relief funds, and thanks to imaginative plans for extracting positive benefits from the volcano's aftermath.

Two-thirds of the island's 1,300 dwellings have been cleaned up through removal of some 900,000 tons of ash, pumice and lava.

However, this material is not just being tossed into the Atlantic. The ash has been deposited near the now-dormant volcano for use as an insulating material in new dwellings. Town officials plan to mix in the ash for new stucco construction. Furthermore, scientists are experimentally pumping cold sea water onto the lava to produce hot water (80 deg. C) to heat homes. At least two homes are already being heated successfully by this method.



## World Environment Briefs

### COMECON Program

About 400 scientific and research and development institutions inside COMECON have embarked on the bloc's first five-year joint program for environmental protection. The work is being carried out by the Council for Environmental Protection and Improvement which is set up under the Committee for Scientific and Technological Cooperation within COMECON (the Eastern Bloc's Council for Mutual Economic Assistance).

The program as drawn up considers social, economic, organizational, legal, educational and health questions. It also includes such practical tasks as development of pilot plants for new gas and water purification installations; control and measuring instruments; and a unified approach to monitoring pollution of the air and water.

One practical agreement recently signed among Bulgaria, Hungary, Poland, Romania and the USSR concerns the purification of granulated anhydride from waste gas from power stations, chemical or metallurgical plants.

COMECON includes Bulgaria, Cuba, Czechoslovakia, German Democratic Republic, Hungary, Mongolia, Poland, Romania, the Soviet Union and, as observer, Yugoslavia.

### Soviet Spending

During 1975 the Soviet Union plans to spend "each 10th rouble" on a comprehensive environmental protection program, according to *Tass*, the Soviet press agency.

This growing attention to the problems of ecology, *Tass* reports, has led to the introduction of a new section in the state plan and the budget for 1975 — Protection of Nature and Rational Utilization of Natural Resources. It sets forth a generalized list of procedures for the protection of resources. More than 1800 roubles (nearly \$2 billion at the official rate of exchange) have reportedly been set aside for environmental protection under this section of the state plan.

### Danish Discharge

Danes dump five times as much pollution into the narrow waters separating Denmark and Sweden as do Swedes, an official report from the environment committee of the Swedish-Danish Øresund Committee says.

In one year, Danish cities and industry pour 65,000 tons of organic matter into the Øresund compared with 12,000 tons from the Swedish side. This matter reduces the oxygen content of the water harming plant and fish life. In addition, each country also sends large amounts of phosphate and nitrogen, poisons and virus into the Øresund.

The report will serve as the basis for a study to recommend joint action to cleanse the popular but now dangerously polluted recreational waterway.

### Car Runs on Water

A Polish M-20 four-door sedan has been tested on a mixture of tap water and low-octane gasoline. The four-cylinder engine is fed gasoline in the regular way but water is piped from a tank under the hood into the carburetor. The heat of the exhaust manifold vaporizes the water before it reaches the carburetor. The mist does not add to the energy potential of the fuel but it allows the engine to run cooler and also save some 4 liters of gasoline every 100 kilometers. This drops consumption to about 10 liters per 100 kms (or 23 mpg).

PAP, the Polish News Agency, says the car has been tested several months in Poznan adding that the engine was in excellent order.

### Oil Pollution

As a result of the recent oil spill in the Strait of Malacca by the 200,000-ton Japanese tanker "*Showa Maru*," the Indonesian government is reportedly studying the possibility of estab-

lishing a permanent National Committee on Sea Pollution.

Indonesia already has an inactive sub-committee on sea pollution which is part of its National Committee on Living Environment. The proposed new National Committee would be charged with drafting regulations on sea pollution taking into consideration the convention of the UN Maritime Consultative Organization.

### Pickling Process

The Austrian Ruthner Industriebau A.G. has developed NEOLYT—a neutral pickling process for stainless steel whereby the cinder marks on mill steel are removed without damaging emissions to the atmosphere around the pickling plant.

The company also claims savings of pickling acids. While the process does not offer total regeneration, it removes toxic components at a price that can be borne in any normal plant operation.

Sodium sulphate is used as the pickling agent in a tank in which electrodes build up a d.c. field that, in turn, separates the sodium sulphate. The products are sodium lye plus hydrogen and nitric acid plus oxygen. Most of the NEOLYT is recycled; the hydrogen and oxygen are discharged via stacks as non-explosive and non-toxic gases after being diluted with air.

### Downtown Vienna

Downtown Vienna, the 2,000 year-old core of what was once a Roman fortress against the Teutons, is to be revitalized.

The twice daily migration of the 130,000 or so Vienna workers poses major problems in the city's medieval road system, complicated intersections and vast number of bottlenecks.

The concept to be presented to the Vienna Diet this spring by the Vienna Municipality calls for a total ban of private traffic; several loop-shaped approaches for hauling goods to and from the city; and expansion of pedestrian malls.

The city government's plan would also increase underground parking from the present 5,000 spaces to 24,000, while at the same time reducing the



19,000 on-street parking spaces downtown. Also held important is the planting of greenery wherever possible.

### Garbage Handling

A complex household waste collection and packaging system will be built this spring into a housing project at Alt Erlaa south of Vienna, where 10,000 residents will amass some 75 cubic meters of garbage daily.

In the closed-loop system, the collected material will be blown into a separating vessel where the air will be filtered, then released into the atmosphere. The lightweight components separated from the dusty air will be collected by a vacuum system, sealed in plastic containers and sent to the district heating plant for use as fuel. The heavy components of the garbage will fall into a hydraulic press where 18-cubic-meter containers will be filled with the compressed waste.

The entire system will work on a one-way principle, thus avoiding escape of dust or odor at feed points. The

velocity of garbage in the tubes will be up to 90 kilometers per hour. The feed to the separator will be regulated by a computer program.

The system is designed and will be built by MUT-Maschinen-und Transportanlagen Unternehmung Ges. m.b.H. Schiesstattgasse 49, A-2000-Stockerau (Austria).

### Danish Trees

Half of Copenhagen's trees lining the streets, including the famous chestnut trees of City Hall Square, will be dead by 1980 because of street salting, says the Association for Beautification of the Capital. The Association is calling for a vigorous rescue effort.

### Romanian Plan

Preventing atmospheric contamination and encouraging recycle of industrial waste water are the two main approaches Romania's National Council for Environmental Protection says it intends to follow for 1975 and the country's next (1976 to 1980) Five-Year Plan period.

Mateil Nicolau, secretary of the Council of Bucharest, says the steel works of Hunedoara rank first on the state list of industrial complexes to be cleaned up, followed by the synthetic fertilizer works of Tirgu Mures, Turgo Magurele and Novodari, and the chemical complex at Timaveni.

Mr. Nicolau estimates that up to 50% of the investments in new technological enterprises will in the future go toward environment-protection measures.

### Polish Forests

Sulphate and nitrate fallout emitted from coal-fired and chemical industrial plants are blamed for extensive damage to forests and soil in timberland in Silesia, Poland's most densely populated and industrialized area.

Some 65 percent of the forests are pine trees, which are very sensitive to the oxygen/nitrogen balance. The soil in that region is beginning to dry up as a result of changing conditions. The Forestry Ministry in Warsaw has now ordered research into replacement forestation. Planting of oak trees is being considered.

## CALENDAR OF MEETINGS, SEMINARS AND EVENTS

**Mar. 3-8**—Intergovernmental Oceanographic Commission, Fifth session of Executive Council, Venice.

**Mar. 10-14**—65th Session of the FAO Council, Rome.

**Mar. 14-19**—International Anti-Pollution Exhibition, Tokyo, at the Tokyo International Trade Center. Contact Nihon Kogyo Shimbun Co., 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100 (Tel: 03-231-7111).

**Mar. 17-21**—International Symposium on the Use of High-Level Radiation in Waste Treatment — Status and Prospects, Munich, sponsored by the International Atomic Energy Agency.

**Mar. 17-10 May**—The United Nations Third Law of the Sea Conference, Geneva.

**Mar. 19-21**—United Nations Environment Programme Pulp & Paper Seminar, Paris. First in a series of industry seminars sponsored by UNEP. Similar seminars planned for **aluminum producers** in September, for **auto industry** late 1975.

**April 7-9**—Symposium, "The Oil Industry — One International Community Member in the Environment," Teheran. The International Petroleum Industry Environmental Conservation Association is sponsor. Contact Mr. Featherstone, IPIECA, 110 Euston Rd., London NW 1, 2DP.

**April 7-11**—26th Session of the Legal Committee, Intergovernmental Maritime Consultative Organization, London.

**April 14-18**—The International Symposium on Reliability of Nuclear Power Plants, Innsbruck, Austria.

**April 16-2 May**—UNEP's Third Governing Council meeting, Nairobi.

**April 23-25**—Water Management Sector Group meeting, Paris, sponsored by the Organization for Economic Cooperation and Development.

**May**—UNEP-sponsored second Council of Europe meeting to exchange information on national regulations and practices regarding air pollution, Strasbourg.

**May 7-10**—"Conference on Population Growth and Rural Development," Kampala, Uganda. Sponsored by Eastern Africa Agricultural Economic Society.

**May 13-16**—Third International Ocean Development Conference, Tokyo.

**May 26-28**—World Energy Conference, Copenhagen.

For further information, contact the Center for International Environment Information.

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## UNEP Council: Meeting Ends on a Note of Financial Urgency

**NAIROBI**—After two weeks of deliberation, the UN's Environment Program (UNEP) closed the fourth session of its Governing Council here last week. The annual meeting opened with UNEP officials maintaining the agency is critically short of funds and closed in a not much better state. UNEP says it is so short of cash that many current projects will have to be cut back and no new ventures undertaken. The four-year-old program has received only half of its promised \$100 million for the five-year period ending next year.

Some countries have paid their pledges in advance or even raised their commitments. But some of the larger pledgers, Canada, for example, have not kept pace and the largest contributor of all, the U.S., has paid only \$12.5 million of its \$40 million pledge.

Roy D. Morey, head of the U.S. delegation, said his government was embarrassed by requests for more funds when there was still a surplus in the kitty and added that, although \$5 to 7.5 million will be provided in 1976/77, "the unspent funds make it difficult for governments to provide more..." It was also noted that some Third World countries, notably some oil-rich Arab states, have not been as forthcoming as might be expected. Only some 58 countries—about half the UN membership—contributed materially to UNEP.

UNEP has an ambitious program of projects embracing many aspects of environment—deforestation, deserts, urban crowding and human settlements, pollution and conservation of natural resources.

In his closing speech, UNEP's Executive Director Mostafa Tolba said "I am glad the Fund program levels of \$34 and \$35.7 million were approved by the Council. It is of course understood that the Secretariat will administer the Fund program in the light of the guidelines you have suggested and within the limits of our actual cash situation. However, I wish to re-emphasize to the Council and to our colleagues in the UN system that these constraints are very tough ones. I feel dutybound to repeat that the rate of progress we have been making in many areas will unavoidably be slowed down or even stopped unless considerable improvement in our resource position is achieved."

Tolba urged all those members who have not paid up against their pledges to do so, adding that the program may not be able to live up to the high aspirations it had

created through "its limited, though conspicuous, successes." He noted that the U.S. is making serious efforts to meet the higher level of payment for 1976 and also that the U.S.S.R. has now paid its contribution for 1975 and '76.

He also noted with satisfaction that after only four years of UNEP all members have come to grips with the fact that no sustained development or meaningful growth can be achieved without a clear commitment to preserve the environment.

UNEP's acting Deputy Director, R. Bruce Stedman, told *World Environment Report* there had been many successes in the two-week session. He noted that all decisions, except one procedural one, were taken by consensus. He expressed satisfaction that at no time had there been open confrontation between developing and developed countries on issues of environment vs. development and that conflicts were resolved by compromise.

He acknowledged some dissension, particularly from Non-governmental organizations (NGOs), on specific issues. For example, some NGOs consider UNEP "has let the team down" on the whaling issue. But Stedman explained UNEP is involved in many projects and doesn't claim to have all the answers. Referring particularly to nuclear energy, he said that, while there is a need for limitation, the International Atomic Energy Agency (IAEA) is also responsible for research on safe disposal of wastes. UNEP is also interested in limiting the use of non-renewable resources, he added, and will consult with IAEA.

Stedman said there is some cause for encouragement

(continued on p. 4)

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## Impact Assessment: European Countries Consider Plans To Adopt It

**BRUSSELS**—Environmental impact statements, which were introduced in the U.S. in 1969, appear to be on the road to wide use in Europe as well. The impact statement concept has been the topic of a recent European conference at Belgium's Louvain University, has been strongly recommended by officials of the European Economic Community (EEC) and is already being implemented or is under serious study in a number of countries.

The EEC is studying the application of environmental impact assessment procedures throughout its nine member states. The study, which is focusing on the scope, content, financing and organizational aspects, could lead to adoption of the procedure in a few years time.

Most European countries do not yet have formalized procedures for assessing the environmental impact of new projects, although the awareness of possible environmental effects is growing. In West Germany, however, impact statements have been required since late last year to be filed for all public projects, an administrative procedure not involving public discussion.

In France, the Environment Ministry has just created a board of environmental and city planning experts to review impact statements that are now mandatory for major public undertakings. The parliament will also vote next month on a bill requiring such statements for a wider range of public and private projects.

In the Netherlands, a committee appointed by the government to study the issue has come out with an interim report supporting the introduction of an assessment system into permit procedures and town and country planning policies.

Great Britain currently has two studies underway on the possibility of impact statements, and Switzerland, Sweden, Norway and Austria either have some preliminary assessment system or are weighing introduction of one.

Dieter Hammer, a high EEC environment official in the Brussels executive commission, told the Louvain conference, which was sponsored by the European Environmental Bureau, that he and his EEC colleagues are hoping someday to institute a broad program based partly on the U.S. experience that would include the environmental, social and economic ramifications of national plans, projects and new products.

"The (EEC) Commission feels that parallel environmental impact statement systems should be introduced simultaneously in all member states," Hammer said.

Recognizing the difficulties in doing this, Hammer added that the initial focus would probably be on assessing new projects such as roads and industrial developments. Since support for impact statements is strongest in the environment ministries of the EEC nations, implementation would begin in areas where they already have jurisdiction. Regulations would have to be flexible enough to fit the legislative and planning pro-

cesses in the different EEC countries, Hammer said, and they would eventually involve public participation.

Other speakers at Louvain dealt with attitudes in individual countries. Oliver Thorold, a London barrister, noted that a leading British environmental official had previously dismissed impact statements as "making the land fit for lawyers to live in." But last year, a study was conducted on statements covering large-scale planning projects. Thorold said that what Britain might be considering would be a "very limited form of impact analysis" that would not cover such developments as the Concorde SST or the use of pesticides. He added that proposals for such assessment have not met wide acclaim.

Ensuing discussions dealt with exemptions to the assessment procedure, public participation and whether the responsibility for drawing up the impact projection should fall on the developer or the public authority. The participants also touched on the possibility that widespread, harmonized acceptance of the impact procedure might lessen the problem of transfrontier pollution, which is a difficult issue in Europe.

But it was noted it would not be feasible to have foreigners participating in another country's assessment procedure and that there might be difficulties in application for countries with federal government structures. Some of the participants were sceptical that the environmental impact system would lead to the blocking of harmful projects. Steven D. Jellinek, staff director of the U.S. Council of Environmental Quality replied that in the U.S. some 6,500 impact statements have been filed under the National Environmental Policy Act and that 800 law suits have led to the significant delay or termination of about 100 projects. DAVID FOUQUET

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## Common Market: New Five-Year Program Continues Environment Thrust

**BRUSSELS**—European Common Market officials have drawn up the outlines of a new five-year environmental program for the nine member countries that they hope to begin introducing in concrete terms beginning next year.

Carlo Scarascia Mugnozza, vice president of the European Executive Commission and Michel Carpentier, who heads the environment and consumer protection service here, released the plan on March 24. The plan is mainly a continuation of earlier EEC efforts that concentrated on water quality but it also includes new or expanded activities in such fields as noise pollution, land use, solid waste management and recycling, assistance to developing countries and preparation of details for a European environmental impact statement (see story this issue). Other major activities are to be undertaken in areas ranging from the growing megalopolis of north-western Europe to mountains and farms, where a "code of agricultural practices" is foreseen.

The draft program also visualizes a more precise way to calculate the costs of environmental programs, and the preparation of ecological maps for the EEC member countries.

The EEC officials also traced the accomplishments of the first community-wide environmental program that was adopted in late 1973. These include steps to assure drinking water supply, adoption of the "polluter pays" principle, participation in a number of international conferences and programs, an environmental research program, and increasing information exchange and cooperation among the member states. Since 1973, the members have notified EEC authorities of some 115 pieces of national environmental legislation.

For noise pollution, which has so far received little attention in Europe, the officials predicted that variable norms would be established for areas based on whether a region is predominantly residential, industrial, or some other category.

They have estimated that the EEC countries, which have a total population of 250 million, produce 1.5 billion tons of solid wastes each year, and that this represents a considerable loss of useable resources and a major pollution problem. Among the measures to be considered will be the encouragement of durable or reusable materials, ways to stabilize markets and prices for recycled materials, and improved information flow among waste exchanges. The program gives top priority to ferrous metals, non-ferrous metals, paper, glass, plastics, rubber, textiles and waste oil.

The commission officials, noting that four member countries have already either adopted or are considering environmental impact statement systems, said such a procedure is justified at the EEC level. They added that studies will be undertaken on how to implement one.

The EEC will also try to stimulate sound environmental practices in the more than 50 former colonies

closely associated with it through the trade and aid system. The officials added that planning for EEC aid and investment funds in developing countries will consider the environmental impact of the projects.

It is expected the environment ministers of the nine member nations will accept the outline program sometime this year and that the commission will present specific proposals to implement the policies during the five-year period following.

DAVID FOUQUET

## Tokyo's Government Tightens Its Sulphur-in-Fuel Regulations

**TOKYO**—Officials in the Japanese capital, the largest metropolitan area in the world, have drawn up new air pollution control measures aimed at cutting in half the sulphur oxide emissions from industry and diesel vehicles that were allowed in 1973.

The Tokyo Metropolitan Government Environmental Protection Bureau says it will enforce the new measures despite claims from business interests that the program will cause reduced operations in factories and the withdrawal from service of thousands of diesel powered vehicles. A vast number of Japanese taxis and trucks are fitted with diesel engines, and it is claimed most of them will not be able to meet the new standards.

The measures will reduce allowable sulphur content in oil used by industrial plants consuming more than 300 liters of heavy oil per hour—about 3,500 factories in the city's 23 wards and in five surrounding cities—from an average of 0.75 per cent to less than 0.45 per cent. An upper limit on sulphur oxide emissions from each of these plants will also be established on the basis of emissions data, the amount of oil consumed and other pertinent factors revealed in studies made in 1973. Bureau engineers estimate that their planned restrictions on total sulphur oxide emissions will reduce them by 65.5 per cent from 1973 levels.

The authorities also plan to reduce the amount of sulphur in diesel oil to an average of 0.25 per cent from the current 0.4 per cent.

If the new control measures are enforced as now planned, sulphur oxide levels in Tokyo are expected to be curtailed significantly. Levels have been falling from the 1966-67 annual mean of 0.056 parts per million due to increased imports of low-sulphur crude and residual oils, elevation of stack heights and application of stack gas desulfurization techniques. By 1972, the annual mean had improved to 0.031 ppm.

The sulphur oxide standard for Tokyo is set at 0.025 ppm, and, because of the recession, it is being met today. Under the new restrictions, the limit will be dropped to 0.015 ppm.

A.E. CULLISON



## Nile Monitoring System Seen As Model for Third World

**NEW YORK**—An extensive water quality data gathering and handling system—first of its kind in a Third World country—has been established along the Nile River in Egypt. The new system was described at this month's American Chemical Society meeting here in a paper by M. Mahdy, University of Cairo, and K.H. Mancy and R.A. Deininger of the University of Michigan. Dr. Mancy is manager of the over-all program, which is supported by the Egyptian government, the special foreign currency program of the U.S. Environmental Protection Agency (*WER*, Oct. 27, 1975, p.5) and the Ford Foundation (*WER*, Dec. 8, 1975, p.5). Drs. Mahdy and Deininger are responsible for the data handling aspects.

The project is two-phased—the first to establish a Nile information center, and the second to monitor the effects of the Aswan dam on the lake above it and the river below.

The authors told *World Environment Report* that the data system has been operating for about a year now and at this point the emphasis is on entering data and establishing records. They do not expect to be able to draw conclusions for another year.

Five areas of the Nile have been designated for monitoring—downstream of the dam, halfway between

Aswan and Cairo, around Cairo and the beginning of the two delta branches, at the end of the east branch, and at the end of the west branch. Each of these sections has five or six monitoring stations, except the Cairo section which has 12. Monitoring is done manually, which is considered more suitable to local conditions than automatic sampling. Most of the project's equipment is of U.S. manufacture. From 60 to 70 per cent of the project is integrated with existing Egyptian government activities, Dr. Mancy added.

The system is monitoring parameters never measured on the Nile before and is also incorporating available historical data. Once enough data have been entered, the authors said, trends in water quality become apparent, and it will also become possible to project what effect new industrial development up stream will have.

The Nile study will not only provide vital data to the Egyptian government, Dr. Mancy told *WER*, but it will also become a case study of the impact of development on a river basin that should be applicable to other Third World countries.

Dr. Donald Oakley, who as director of EPA's International Technology Division is responsible for the agency's participation, told *WER* he hopes the Nile experience will prove adaptable to such other situations as the huge Tarbela Dam in Pakistan—the world's largest earth-fill dam. Brazil and Paraguay have also indicated interest in applying the approach to the huge dam on the Parana River, he added. It is hoped, too, to extend the Nile project to the other countries of the Nile Basin, and talks are already underway with the Sudan. JRM

### UNEP Meeting (continued from p. 1):

on the funding issue because 12 countries, in response to Governing Council appeals, have pledged not only to pay in advance but also to increase their pledges. Stedman hopes the funding difficulty is a temporary one because now governments have understood and are beginning to respond to the real need for UNEP "in a closed system world." However, he continued, "We will certainly postpone approval now for a good many projects. We will not be able to fulfill our current program of projects nor embark on any new ones.

"The projects to which UNEP is legally committed will continue, including some of the most important—the follow-up on the Mediterranean Conference and also the desertification conference—but not those to which we are only morally committed.

"We will look very carefully at anything that is needed, but we are morally committed to a hell of a lot of things we just can't do right away. We need the money; it ain't there," Stedman said.

Asked if he thought UNEP had spread itself too thin and should instead concentrate on a few specific projects, as suggested by the U.S., Stedman agreed that "there is too great a diffusion and dispersal in our efforts." Referring to the issue of human settlements, for example, which is a major UNEP priority, he said that only if the environmental issues of settlements are foremost should it be a UNEP concern. A matter of low-cost housing is not essentially a UNEP problem.

Whatever is established as a result of the upcoming Habitat conference in Vancouver, he went on, even if it is something entirely separate from UNEP, it is essential it have the same relationship to UNEP as, say, FAO or UNESCO. Although environment and human habitation issues are interdependent, he concluded, if human settlement is made an integral part of UNEP it would be a case of the tail wagging the dog.

It should be noted that any talk of a tandem agency is regarded in Kenya as a manoeuvre intended to diminish the importance of UNEP in Nairobi, according to Kenya's Minister for Power and Communications, Omolo Okero.



## Waste Oil: Rising Prices Stimulate New Interest in Re-Refining

About 2.4 billion gallons of lubricating oil is sold each year in the U.S., according to the *Wall Street Journal*, of which about half is consumed in the lubricating process. Of the remaining half, only about 10 per cent is reclaimed after use by re-refining; nearly 50 per cent is burned as a fuel supplement, another 18 per cent is used in road oil or asphalt and the rest is dumped on land or in sewers.

However, the soaring cost of oil and environmental restrictions on dumping and burning are giving a new boost to the U.S. re-refining industry, the Journal said. Here is a roundup by *WER* correspondents on how countries in Europe and elsewhere are handling the problem:

**Common Market**—Waste oil handling in the nine-member European Economic Community ranges from highly structured in West Germany to a situation described as "anarchic" in Belgium and Luxembourg. But all EEC countries are scheduled to adopt the West German model by June 1977 under a new EEC law, one of the first pieces of legislation in the EEC environmental program.

The EEC law, which will require licensed collection firms and processing for most users bigger than the small garage, is also seen as the spearhead of a new emphasis on recycling as a means of easing balance of payments deficits, saving raw materials and controlling pollution.

According to EEC estimates, there is an output of some 2.5 million tons of used oil in the community each year. Of this, about 50 per cent is collected, handled properly and reused, saving an estimated 10 million tons per year of crude oil.

To bring users and re-refining firms up to date on the new law and technology, the EEC commission sponsored a conference in Brussels last month organized by the European Union of Independent Lubricant Manufacturers and attended by over 200 participants from 22 countries.

Several speakers pointed out that re-refining has not been profitable unless sustained by incentives. In West Germany, for example, the collection and disposal of used oil is funded by a levy on the production and importation of oil. Denmark has a law requiring municipalities to provide facilities for disposal of waste oils. France and Italy have laws designed to encourage re-refining by reducing the tax on oil products derived from that process. The EEC system will include inducements similar to the German system.

The participants also noted that burning used oil directly in industrial furnaces is highly polluting because of its lead and phosphorous content. In the Netherlands, it is estimated that if 70,000 tons per year of crankcase oil was burned, it would add 350 tons of lead to the

atmosphere, about one-third that now emitted in vehicle exhausts.

It was also noted that it is not economical to burn used lubricating oils as fuel, because they are more expensive than fuel oil.

The two main methods for re-refining oil discussed at the conference were the acid/clay treatment and vacuum distillation/hydrofinishing. The former was characterized as producing additional pollution, while the second was regarded as being as clean as a normal refinery.

**West Germany** has a two-pronged system for dealing with waste oils. In the first place, the state governments provide free collection points, where private users are obliged to dump their used oil and which are frequently emptied. This huge network of collection points is being enlarged. In only three districts, for example—Upper Bavaria, Lower Bavaria and Middle Franconia—there are 400 collection points, all easily accessible.

Coupled with the collection system are strict laws against any disposal that might cause air, water or land pollution. These laws apply the "polluter pays" principle, under which polluters are heavily fined for violations and also fund the collection system.

The less-polluted oil collected is re-refined to be used again as a lubricant; other oil is recycled as fuel, sometimes in systems that have gas purification equipment to prevent air pollution, sometimes in garbage or waste incineration systems. The used oil is also valued by the cement industry and in bituminous mixing installations.

The extensive German recycling system grew out of the problems of the 1930's, when shortages forced the country's engineers to develop one. Here is how the government describes the system today:

"The Waste Oil Law (Altölgesetz) is the last step in a number of attempts to dispose of waste oil without damage to the environment and in consideration of economic requirements. Those who undertake to regenerate or burn (without noxious effect on the environment) the waste oils collected in a specific area under their charge will receive cost-covering grants from the Federal Office for Trade and Industry. The funds for this purpose come from an equalization levy paid by manufacturers and importers. This cost is actually reflected in pricing and is therefore ultimately paid by the consumer. Thus the 'polluter pays' principle is given full effect."

**Britain** does not measure up in waste oil reclamation, according to Friends of the Earth. Of the 500,000 metric tons of waste oil generated annually, no more than 80,000 is reclaimed. A government paper, "War on Waste," in 1974 recommended steps to reclaim 370,000. (continued)



In a study, "Disposal of Awkward Household Wastes," also published in 1974, the Department of the Environment acknowledged the pollution dangers from indiscriminate dumping of waste motor oils and urged "as a matter of urgency" that local authorities follow three courses of action: (1) provide disposal facilities at refuse disposal depots, (2) approach local garages in hopes of establishing additional collection points (3) publicize these facilities and ask for public cooperation.

Some local authorities have acted on this advice and have tried to encourage re-refining by using only recycled oil in their own vehicles. But some authorities have provided facilities only when badgered by concerned individuals.

Friends of the Earth accuses the Department of the Environment with dragging its feet. The department has not yet issued circulars to local authorities giving guidelines for action. The first report of the department's Waste Management Advisory Council, published in January (*WER*, Feb. 2, p. 2) acknowledges "a prima facie case for greater recovery" but awaits the report of the Economics Group to see what is economically feasible. Environmentalists hope that when this report appears it will include in its analysis the cost of dealing with pollution caused by oil not recycled or properly disposed of.

Friends of the Earth issued its own report—"Oil Change"—in February in which it urges its members to undertake local publicity campaigns, and contact their Members of Parliament to urge implementation of the government's recommendations.

**Denmark**, like West Germany, has a law, dating from 1972, covering waste oil. The law requires anyone wishing to dispose of used motor oil to contact the municipal authority. The authority can give permission for disposal if it is not contrary to law. Otherwise the waste must be surrendered to the authority.

But Danish officials admit the law has not worked satisfactorily and that a lot of illegal dumping of waste oil takes place on landfills. So far there have been no prosecutions. One problem is that there are not enough receiving stations, a situation officials hope to remedy by the end of this year. When the law was drafted, oil prices had not risen to the point where it was economic to collect and re-refine used oil, but that too is changing, the Danes believe.

In The Netherlands, 100,000 tons per year of waste oil is generated, none of which is re-refined. The Ministry of Economic Affairs is studying the economic aspects and the Ministry for Environment the environmental aspects. So far they agree there should be no re-refining because of harmful byproducts, but experiments will continue to find a refining method that will result in a cleaner product. Used oils are now used as fuel, but under a recent law sulphur percentage must be kept to acceptable

levels. Collection of used oils will be done by firms licensed by the government under the chemical waste law.

**In Japan**, dumping of used oil into sewers is prohibited under the water pollution and fire prevention laws. Used oil is picked up at garages by locally licensed collectors.

In the late 1940's and early 50's, 30 per cent of these oils was re-refined, 40 per cent was used as fuel and the remainder was either dumped or burned. By the mid-1950's increased imports drove down the price of oil products, and lubricant oils had become more diversified and specialized. Therefore, collectors stopped re-refining used oil and used only small amounts for fuel—most was dumped and burned at authorized sites.

However, in the wake of the oil crisis of 1973, Japanese drivers have become very thrifty and have been driving longer mileage between oil changes. Therefore, used oil is nearly spent and is unfit for re-refining. An estimated 80 per cent of used oil collected is used as fuel, mixed with new fuel oil, and the remaining 20 per cent is disposed of at authorized dumps. Used motor oils are not used for road oil or asphalt in Japan.

A semi-official research center has recently been established to look into ways and means for recycling waste materials, and it is believed this organization is formulating some type of value-added tax for recycled materials. Recycled oils may receive this treatment when motorists return to more-frequent oil changes.

**In India**, the annual consumption of 600,000 metric tons of motor oils has declined to 500,000 due to price hikes. Motorists use their cars sparingly and change their oil less frequently than before.

The Indian government hopes to encourage re-refining of used oils. But, because a collection system is lacking, only about 28,000 metric tons is available per year. This could be raised to 60,000 tons with a better system, a petroleum ministry report estimates.

Used motor oils cost less than one-fifth as much as virgin oil, and the cost of a re-refining is estimated at no greater than 10¢ per litre. A plant with a 5,000 metric ton per year capacity would pay off in three to five years, it is estimated. However, the collection system is lacking.

The government has so far issued 35 licenses to industry to start re-refining plants with capacities from 15 to 500 metric tons in different parts of India. The government has offered incentives and tax relief to enable these plants to operate at full capacity. With an improved collection system it is believed even the existing plants could bring production to 35,000 to 45,000 metric tons.

Today, there is the problem of environmental pollution caused by unsatisfactory or illicit re-refining methods, which produce acid sludges. Some garages use their own crude systems and mix the product with virgin oil and sell it as "pure."

CONSTANCE CORK, A.E. CULLISON, DAVID FOUQUET,  
HENK KERSTING, WILLIAM MAHONEY, ALAN MASSAM,  
R. SATAKOPAN



## In Brief...

### Dutch Develop Water-Jet Oil Spill Cleanup System

A Dutch company, Skimovex B.V. of The Hague, has developed a water jet system for cleaning up oil spills and other floating substances from the surface of either sea or inland waters. The system also separates the collected oil from the water, thus permitting recycling, according to the company.

The unit consists of two floats linked by a platform under which is an enclosed bottomless screen partially beneath the surface of the water. On the platform is a pump supplying a number of water nozzles. The nozzles direct a jet onto the spilled oil causing it to be sucked under the surface and then up into the bottomless screen from which it is pumped to shore. According to the company, the system will remove 98 per cent of a 500-sq-meter slick 2 cm thick per hour, regardless of viscosity. The unit is said to be insensitive to waves up to 2 1/3 feet high.

The Commercial Division of the Netherlands Consulate General in New York will discuss U.S. licensing.

### World Wildlife Fund Passes \$20 Million Mark in Grants

The World Wildlife Fund has made more than \$20 million in grants since its founding in 1961. The money has gone to 1,448 projects in over 80 countries to establish conservation areas such as national parks, nature reserves and sanctuaries, to support studies of endangered species as a basis for management plans, to provide equipment for research, management and control of poaching and to support conservation education.

Among the endangered species aided by WWF are the tiger, vicuna,

rhinoceros, polar bear, orangutan, birds of prey, Hawaiian goose, and the monkey-eating eagle. The fund has also played a key role in conserving Lake Nakuru in Kenya, Donana National Park in Spain, Marchauen-Marchegg and See-winkel in Austria, and the New Jersey wetlands in the U.S.

The fund now has 26 national affiliates on every continent.

### Mexico Undertakes Big Jungle Reclamation Program

Turning a deep jungle into productive land while providing work for thousands of nomadic Indian farmers is the aim of a project announced by the Mexican Secretariat of Agriculture and Ranching. Affected will be the Lacandonian jungle in the southwest Mexican state of Chiapas, near the Guatemalan border, an area where the ancient "clear, cut and burn" method of cultivation has destroyed 25 per cent of the jungle. Some 1,300,000 hectares are involved, with immediate action planned on 600,000. These are to be divided into six modules of 10,000 hectares each for cultivation. Initial government investment will be \$4 million.

Studies have shown that 53 plants will grow in the area, among them beans, rice, rubber, papaya, bamboo, red cedar and mahogany. Plans call for a division of the cultivated lands into 4 per cent in annuals, 12 per cent in fruit plants and trees, 18 per cent as grazing lands, 17 per cent for commercial cultivation and 49 per cent as forests.

Mexican officials hope the program will eliminate the "agricultural nomad characteristics" of the region and create 25,000 jobs. The Lacandon Indians are the Chiapas state descendants of the Mayans.

### Malaysia Establishes Plan To Deal with Malacca Spills

The Malaysian government has

approved some \$2 million for a contingency plan to reduce the dangers of oil spills in the Strait of Malacca. The Minister of Science, Technology and Environment, Tan Sri Ong Kee Hui, said the plan involves the use of floating balloons to trap spills and the stationing of tankers and tugboats at ports along the strait. Tenders will soon be called for the required equipment, he added. The move follows several accidents in the Strait of Malacca over the past couple of years that have resulted in damaging oil spills.

### South Korea Reports Big Rise In Sulphur Dioxide Pollution

The South Korean Ministry of Health and Social Affairs reports that sulphur dioxide pollution in Seoul almost doubled last year to 0.088 ppm compared with 0.046 in 1974. The survey showed levels of 0.072 ppm in residential areas, 0.092 on roads, and 0.096 in industrial areas and 0.042 in forest areas on average throughout the year.

The Ministry has ordered five big cities and nine industrial towns to report pollution levels once each month. The cities are Seoul, Pusan, Taegu, Incheon and Kwangju and they must report levels from four different areas representing residential, industrial, commercial and forest. The towns of Ulsan, Masan, Yochon, Iri, Samchok, Chinhae, Tanyang, Pohang and Kumi must report for three areas—industrial, residential and forest.

### U.S. Rejects Soviet Proposals For Environmental Meetings

The Soviet Union last month proposed a series of all-European conferences on energy, transport and environmental issues as a follow up to the Helsinki Security Conference of last July. But the U.S. rejected the proposal, doubting that the talks could produce "concrete results." The issue arose at the annual meeting



in Geneva of the UN Economic Commission for Europe (ECE), which, like the Helsinki Conference, groups all the nations of Europe along with the U.S. and Canada. The Helsinki conference entrusted ECE with developing East-West business contacts and other aspects of cooperation in economics-related fields.

Soviet Deputy Foreign Minister N.N. Rodionov told the meeting that the proposed conferences would be "an important step" toward fulfilling the Helsinki commitments. But U.S. Ambassador Francis Dale replied that a better way would be for ECE to adopt and carry out "a limited number of specific, action-oriented projects." He suggested promoting trade development through information exchange and business contracts for specific projects. Ambassador Dale said the U.S. would give priority to a project such as organizing international research cooperation on specific problems. He suggested ECE launch work on

environmental problems with multi-lateral dimensions, such as the protection of rivers, lakes and seas in the area covered by its membership.

### Council of Europe Nations Agree on Environment Issue

Representatives of the 23 member countries of the Council of Europe met for two days in Brussels late last month to re-enforce their cooperation in the preservation of the natural environment.

The meeting resulted in broad declarations that the participants hope will be translated in coming years into firm projects and laws in the participating countries. These sweeping conclusions drew fire from some sources as lacking substance and failing to come to grips with the issues. Marc Dubrulle, head of Belgium's Inter-Environment organization, termed the declarations "among the emptiest I have seen."

But other participants and Council officials expressed satisfaction at the results, saying the states are bound to follow the policies sketched by the delegates. They noted that a previous gathering in Vienna in 1973 resulted in some concrete followup. A third gathering is planned for Zurich in 1979.

The meeting's resolutions concentrated on safeguarding wildlife and the natural habitat. They request the Council of Europe to begin drafting as soon as possible an international convention on the conservation of wildlife and its habitat in Europe with emphasis on migratory species. The delegates also decided to establish methods and machinery to evaluate in advance the effects of development plans and to create a European network of protected areas to protect the European biological heritage. Another step was the beginning of an inventory of such reserves and of endangered animals and plants or those that could become so.

## Calendar...

**May 11-13**—Threatened and Endangered Species of Plants in the Americas. New York. Sponsored by the New York Botanical Garden.

**May 15-19**—International Conference. Kobe, Japan. "The Role of Local and Regional Government in Improving the Environment for Human Settlement." Sponsored by International Federation for Housing and Planning.

**May 16-20**—Fifth World Symposium on Water Desalination. Alghero, Italy. Sponsored by the International Federation of Chemical Engineers. Chairman is Prof. Anthony Delyannis of Athens Polytechnic.

**May 17-20**—Second International Exhibition and Conference—Hovercraft, Hydrofoils, Advanced Transit. Amsterdam. Sponsored by the Metropolitan Association of Urban Designers and Environmental Planners Inc., New York.

**May 17-22**—International seminar on long-term water management planning. Zlatni Piasatzi, Bulgaria. Sponsored by the UN Economic Commission for Europe (ECE).

**May 24-28**—International Symposium on Lower-Cost Housing Problems. Atlanta, Ga. Sponsored by International Association for Housing Sciences.

**May 27-June 9**—World Environment Exhibition, Tokyo. Sponsored by the Japan Productivity Center and Nihon Keizai Shimbun.

**May 31**—Inter-Secretariat Meeting on Water Pollution. Geneva. UN Economic Commission for Europe.

**May 31-June 11**—Habitat 76. Vancouver, British Columbia. Sponsored by the United Nations.

**June 2-4**—Forum on Ozone Disinfection. Chicago. Sponsored by the International Ozone Institute.

**June 5**—World Environment Day. Sponsored by the United Nations Environment Programme.

**June 12-17**—Environment and Safety 76.

Copenhagen. An exhibition and fair sponsored by Danish environmental authorities and national organizations.

**June 13-19**—Second Seminar on the Role of Transportation in Urban Planning, Development and Environment. Washington. Sponsored by the Economic Commission for Europe (ECE).

**June 21-25**—Second International Congress and Exhibition of ISWA-ITALIA 76. Padua, Italy. Sponsored by the International Solid Wastes and Public Cleansing Association. Sessions on recycling; landfills; incineration, and pyrolysis; sludge treatment; collection, transportation and street cleaning; hazardous waste, including legal aspects. Contact W. Lacy, EPA, Washington, D.C. 20460.

**June 27-July 1**—World Food Conference of 1976. Sponsored by the World Food Institute of Iowa State University.

**July 12-16**—Working Group on Oceanography and Data Exchange. New York. Intergovernmental Oceanographic Commission.

**July 14-16**—Eighth Bicycle/Pedestrian Seminar. Toronto. Sponsored by Metropolitan Association of Urban Designers and Environmental Planners.





# World Environment Report

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## Soviet Union Launches a New Push To Develop Solar Energy Resources

*MOSCOW*—The Soviet news agency Tass has reported that a nationwide program has begun to expand the use of solar energy.

Tass quoted Nikolai Lidorenko, a member of the USSR Academy of Sciences and a solar energy expert, as declaring "the special five-year program developed in the USSR provides for a wide complex aimed at drawing solar power engineering into contributing to the country's fuel balance.

"A number of solar plants for various purposes have been designed in the USSR," he continued. "They are more economical in many cases than those running on fossil fuels."

For example, a new project will use solar water distillation units in the Central Asian deserts—Kara Kum and Kizil Kum—as the most economical means for extending cattle pasture and increasing breeding. Experimental apartment houses with solar cooling systems are being constructed in southern cities, and experiments are underway on space and water heating for buildings.

The Tass story said that the effectiveness of solar-heated hothouses for agriculture has already been proven. Industrial uses have also begun, and the Soviet Union's first factory for manufacturing solar equipment will go into operation in Uzbekistan this year, the story said.

The Soviets have made progress in photovoltaic conversion to electric power, according to Tass, having accumulated considerable experience in space projects and in the national economic programs. Industrial prototypes of ground-based photovoltaic generators with capacity up to 500 watts have been designed, according to Tass, with a service life of at least 20 years. These can be used at remote installations, such as navigational buoys and mountain communication centers.

Lidorenko declared that "today there are no technical obstacles to the development of powerful solar power plants, only economic barriers." He said the introduction of matrix phototransformers will cut the cost of solar energy tremendously. Solar power stations now planned will generate electricity at a cost comparable with nuclear power, the story said.

## Swiss Citizens Will Vote on "Framework" Environment Law

*GENEVA*—The citizens of Switzerland will vote in a nationwide referendum June 13 on a so-called Federal "frame-work" draft law on the environment. The Swiss often decide major issues through direct democracy—that is, by referendum—and can overrule or amend decisions of the Federal Parliament.

The draft is called a "frame-work" law because under the Swiss constitution cantons (states) enjoy certain rights that the national government cannot impinge on. Article 22 of the constitution provides that the Confederation can lay down general principles for the improvement of land and can demand that the cantons establish the precise plans to carry out these principles.

The draft demands that the cantons—many of which already have a wide variety of environmental laws—establish statutes covering environmental aspects of transport, supply, public installations such as schools and athletic facilities, urban zones, industrial developments and others. The cantons must present plans combatting air pollution and controlling emissions, noise abatement, protection of the ground and water, disposal of wastes and building codes.

The cantons will be charged with writing laws to conform to Federal directives and subject to approval by the Federal government. Coordination of the plans will be carried out at the Federal level.

City and rural dwellers are sharply divided over the proposal. Agricultural interests in general favor the measure, hoping it will protect their land against the inroads of building speculators, road builders and expanding cities. The issue is particularly acute around Geneva which sits in an enclave surrounded by France.

(Continued on p. 4)

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## The River Rhine: Affected Countries Agree on Some Steps to Clean It

**PARIS**—Between its source in the Alps and Lake Constance in Switzerland, the Rhine River is clear and sparkling. But by the time it has flowed through the industrial heartland of Europe and reached the Dutch frontier at Nijmegen, where Charlemagne built a palace on its banks, the continent's most important river has become a virtual sewer.

Its cleanliness is of major importance to the estimated 110 million Europeans who use the waters of the Rhine as a source of drinking water. Last year, a leading German newspaper proclaimed "The Rhine is Dying," and recently in the wake of a German Parliamentary decision that eased proposed fines for industrial pollution of the country's waterways, a leading environmentalist again suggested the move meant the death of the mighty river.

The five nations in whose territory the Rhine or its main tributaries flow have been conscious of problems that confront them, but despite years of consultations, treaties and meetings, it was not until early last month at a gathering in Paris that some semblance of a workable program emerged that could reverse the steady pollution of the river.

At that meeting, preliminary accords were reached to combat the tens of thousands of tons of salt and chemical products dumped into the river each day. Participating in the Paris meeting of the Rhine Protection Commission were France, Germany, Switzerland, The Netherlands, Luxembourg and the European Economic Community.

The participants decided to divert some of the estimated 32,000 tons of salt poured into the river daily from the potash mines in the Alsace region of France, Germany and Switzerland. These three countries agreed to finance the installation of a subterranean storage facility that would take in some 20 kilos per second of salt by 1978 and reach 60 kilos per second by 1980 (about 5,500 tons per day). It is estimated that Germany alone dumps salt at about 120 kilos per second. The countries have not agreed on how to finance operation of the facility. The countries earlier agreed on another plan to reduce the salt by 60 kilos per second, so that if the new plan is also applied, the agreements could eliminate a major portion of the salt pollution by 1980.

The meeting also accepted the concept already adopted in the European Common Market countries of limiting toxic materials dumped into rivers. These substances will be classified either on a "black list" to be totally banned or a "grey list" to be limited (*WER*, Jan. 5, p. 1; Nov. 10, 1975, p. 2).

But the Rhine will still be far from clean even after these steps. A West German official at the meeting described the river as "a sick old man wallowing in his dirty bed."

After the river has flowed through the densely populated region of West Germany, past sprawling chemical and other industrial plants, and absorbed the badly polluted Neckar, Main and Moselle tributaries, it carries the equivalent of 1,000 freightcar loads of chloride

every day, plus 14,000 tons of sulphates, close to 10,000 tons of calcium, almost 3,500 tons of magnesium, 2,000 tons of nitrates. The water also contains substantial amounts of toxic cadmium, lead and mercury and has very low oxygen levels.

A fleet of six ships now collects some 7,000 tons of waste oil from the Rhine annually. But the extent of the problem was laid bare in 1971 when a dry spell made a good part of the river bed accessible. Thousands of trucks carted away debris including 10 cars, 700 tires, hundreds of bicycles and baby buggies, and three cadavers.

As a result of all this pollution, the river's life has already suffered major damage, and many species of fish, water plants and micro-organisms are virtually extinct. The impact is particularly severe on The Netherlands, which depends heavily on the Rhine for drinking water and agricultural use.

A recent report by a council of environmental experts in West Germany described the improvement of the Rhine as being mainly a German task and urged sharply increased efforts. West Germany started as late as 1970 to take major steps to clean up the Rhine. Since then, legislation to ban or restrict the disposal of industrial wastes into the river has been tightened and several billion dollars have been invested in construction of sewer canal systems and treatment plants. The expert report said that \$500 to \$600 million annually would have to be spent for many years to restore the Rhine to an acceptable state. The costs would be divided evenly among the federal and state governments and industry.

Although experts felt the brunt should be borne by West Germany, environmentalists believe that international cooperation is needed for any lasting results and that more concrete action is needed than that achieved in Paris.

DAVID FOUQUET, WILLIAM MAHONEY

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## UNEP Will Undertake Soil and Forest Survey in West Africa

*ROME*—An international group of government experts meeting in March at the Food and Agriculture Organization (FAO) here endorsed a pilot project to monitor soil and vegetation in the West African tropics. The new approach is part of the UN's Environment Programme's (UNEP) Global Environmental Monitoring System (GEMS).

Soil is a limited, essentially non-renewable resource of paramount importance, and its forest cover provides the most important ecosystems. Degradation of land is often a result of improper utilization. Therefore, the experts agreed that monitoring forest, grazing land and soil depletion should be closely coordinated.

An increased understanding of the interrelationships among climate, soil, vegetation, animals and humans, particularly in areas now undergoing change, will contribute to improved land use. Monitoring will also give early warning of significant environmental changes (including some natural disasters) so that protective measures may be taken.

Francesco Sella, director of GEMS, told *WER* that "the problems selected are those concerned with the degradation and depletion of soils by erosion, salination, waterlogging; of forests by excessive exploitation, shifting cultivation and fires; and of rangeland by overgrazing, fire and other factors." Assessment of basic natural resources is necessary to the comprehensive reappraisal of the world economic order that may lead to international policy decisions."

The GEMS project will monitor from satellites and aircraft four contiguous countries—Benin, Cameroon, Nigeria and Togo—with large adjacent forest areas. The aim is to develop methodologies so that a monitoring project can be set up to cover the entire tropical belt.

It was suggested at the expert meeting that two or three critical regions other than West Africa should also be designated for study, for example, the moist upland areas of Asia and of Southeast Asia. In these two regions, human impact has caused exploitation of forests, cultivation of mountain slopes, sometimes involving slash and burn, and heavy grazing.

The experts agreed that the monitoring of soils, forests and rangelands should start with a small-scale inventory over a large area to determine the degree of vulnerability of the natural resources. On the basis of current trends, local authorities could decide whether some limited areas need consistent monitoring on a larger scale, or protective or restorative action.

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The experts recognized the importance of remote sensing (aerial photography, Side Looking Airborne Radar and Landsat satellites) interpreted on the basis of field work. Aerial photographs and maps going back ten or 20 years will show the extent of change. Facilities for interpreting and mapping from satellite imagery are available to the project at FAO headquarters. In view of the volume of data, it is considered a necessity to develop a computerized data processing system and automated mapping based on the FAO/UNESCO World Map of Soils.

Sella said that "the distant aim of all this activity is to obtain a transect of the soil and cover situation, from the humid tropical forest through woodland and semi-arid rangelands, up to the limit of deserts, with the mobilization of the different monitoring components operated by various members of the UN system, governments, and specialized bodies, including WMO (World Meteorological Organization), FAO and UNESCO, in cooperation and with the financial support of UNEP."

FAO and UNESCO, which cooperated on the World Map of Soils, are also cooperating on a "World Map of Areas Affected or Likely to be Affected by Desertification," and a "World Assessment of Soil Degradation" through field studies and aerial surveys together with climatological information supplied by WMO.

VITTORIO PESCIALLO

### WER Subscriber Briefing Series

Luncheon at the United Nations  
June 17, 1976, New York City

Gerald M. Hansler  
Regional Administrator, Region II  
U.S. Environmental Protection Agency  
"Environmental Issues in the Caribbean"

Subscribers to *World Environment Report* are cordially invited to attend the next in a series of private luncheon briefings held by the Center for International Environment Information.

Mr. Hansler directs all of EPA's activities in New York, New Jersey, Puerto Rico and the Virgin Islands. He has represented EPA as a consultant to the government of the Dominican Republic. Prior to his appointment to EPA in 1970, Mr. Hansler served with the Consumer Protection and Environmental Health Service of the Department of Health, Education, and Welfare.

Space is limited and reservations are open only to *WER* subscribers. Please respond before June 4 by writing or calling Mrs. Jane Lalou, Center for International Environment Information, 345 East 46th Street, New York 10017, (212) 697-3232. There will be an all-inclusive charge of \$35, payable in advance. Reservations may be cancelled up to 48 hours before the luncheon for full refund.



## \$40 Million Project To Clean Up Phillipines' Laguna de Bay

**MANILA**—After years of talk but little action, something is finally going to be done to save one of Southeast Asia's largest lakes from ecological disaster. The lake is Laguna de Bay in central Luzon about 12.5 miles southeast of this capital city.

Laguna Lake was part of Manila Bay until geological changes occurred. Now it stretches over 350 square miles and holds some 2.5 billion tons of water. The area around the lake, including Greater Manila, has a population of more than six million, which will rise to an estimated 14-16 million by the end of the century.

Thus, Laguna Lake has the potential for being a major source of fresh water, irrigation and fish. Yet that remains only a potential, and the lake is in fact dying. The problems are both natural and manmade. A major one is that because the lake is at sea level and is connected to Manila Bay by the Pasig river, it is subjected to an inflow of seawater during the April-June dry season. Laguna's salinity ranges from 100 to 2,000 parts per million (ppm).

A second major problem is the tons of pollutants dumped into the lake each day. Much of this comes from the industries and settlements along the Pasig and Marikina Rivers which during the high tides in dry months flow back into the lake. Toxic residues from fertilizers and pesticides flow into the lake.

The Phillipine government has been concerned about the state of the lake since the early 1960's. But it is only today, thanks in large part to a recent \$27.5 million loan from the Asian Development Bank (ADB) that a serious effort to save Laguna de Bay is planned. The whole project will cost \$40.34 million.

The program has three basic projects: (1) Construction of a huge \$21 million hydraulic control structure on the Pasig to halt the backflow of seawater and pollutants; (2) Construction of four irrigation systems to provide water for 15,000 hectares and, it is hoped, double the region's rice production; (3) Drafting of programs to control industrial and other pollution and to lay the groundwork for integrated development of the region.

One element of the third item will be a feasibility study for construction of two large sewer systems in the 1980's.

Experts estimate that about one-fifth of the Laguna de Bay pollution will be eliminated by the hydraulic control system, and that the proposed sewerage system will eliminate pollution from 102 of the 125 existing industries in the lake basin. Work on the project will begin this year. ARTHUR C. MILLER

## Indian Government Announces Its National Population Policy

**NEW DELHI**—The India government announced last month its new national population policy aimed at reducing the growth rate to 1.4 per cent by 1984. India now has 600 million people and adds 13 to 15 million—one Australia—every year.

Karan Singh, minister of health and planning, in announcing the policy following a two-month national debate, said, "If the current rate is unchecked, we will face a population explosion of crisis dimensions to one billion by the turn of the century, diluting our economic and industrial progress and condemning us to poverty."

Karan Singh said that compulsory sterilization after the birth of the second or third child will not be introduced at the national level but will be left to the discretion of the states. Maharashtra, Haryana and the Punjab have drawn up such plans and others are to follow suit.

Karan Singh said legislation will be introduced to raise the marriage age for girls from 15 to 18 and for boys from 18 to 21. Violations will be punishable by fine or imprisonment, and marriage registration will be required to ensure compliance.

The second major step will be to freeze at the 1971 census levels the population figures used to calculate central assistance for states, devolution of taxes and grants-in-aid. This will encourage states to control their own population growth and not use it as an excuse to demand more central assistance.

As an incentive to voluntary sterilization, the government will raise the reward to \$20 for sterilization after two children, \$13 after three and \$9 after four or more. Steps are underway to build sterilization facilities in the 560,000 rural villages where 80 per cent of the population lives. Only the fringe of this problem has been touched so far, Karan Singh said.

The government will also pump money into research on contraception and reproduction, and introduce family planning instruction in all schools. The government will also assist electrification of villages because it has been found that this results in a marked decline in birth rate. The government will give other incentives such as housing loans, land allotments and job promotions to families limiting their size, and group incentives for doctors and agencies assisting in the program.

So far, Karan Singh said, there have been 2.6 million sterilizations in 1975-76, compared with 1.3 million in the same period in the previous year. Demographers say there should be 7.5 million per year. R. SATAKOPAN

### Swiss Vote (continued from p. 1):

The city's only farmland lies in the so-called "frontier zone" between the canton and France. Land values have skyrocketed as the city grows with no space to spread.

The Geneva Agricultural Chamber believes that only the guarantees of Federal law can protect the remaining

farmland, and fears the city will attempt to take over the land for hiking paths, parks and other leisure facilities. The fears have been stimulated by the Geneva Cantonal Committee, which called for rejection of the Federal draft.

So far, most political parties have hedged and avoided commitments. WILLIAM MAHONEY



## Industry Access: European Environment Officials Are Open to Suggestions

One complaint often voiced by businessmen and industry groups in the U.S. is that they do not have access to the governmental decision process soon enough to ensure that environmental regulations are technically and economically feasible. Many environmentalists would argue that the reverse is true.

*World Environment Report* asked its correspondents to survey the situations in their countries on this issue. Here is a roundup of European responses. Other countries will be covered in *WER's* next issue:

**Common Market**—Industry views on environmental issues, according to various sources in Brussels, have no difficulty in getting across to those involved in the European Common Market's decision-making process.

Industries affected by proposed rules either work through the formal, institutionalized advisory system or through effective lobbying at the European or at the national level. Some sources feel industry has too much influence in the process. "Everyone panders to their interests," commented one European journalist specializing in environmental matters.

Industry has direct ties to the EEC system through a body known as the Economic and Social Committee, an advisory group composed of business, labor and other representatives. Although the body's views are purely advisory, they generally represent just the visible tip of other efforts. In some specific cases there are also special advisory panels set up to deal with environmental questions. Michel Carpentier, director of the EEC Commission's environmental service, noted that such specific commissions exist in the chemical and pulp and paper industries, and that a new form of consultation was attempted recently at an important joint conference on waste oils in Brussels. (*WER*, April 26, p. 5). Several hundred participants attended this March meeting that was cosponsored by EEC and the European Union on Independent Lubricant Manufacturers.

Carpentier added that EEC contact with industry groups depends on whether the industry has a special trade association at the European level. Several do, and some are very active lobbyists.

One of the most effective of these groups is the Union of Industries of the European Community (UNICE, for its French initials), which acts as a European association of manufacturers and has a powerful impact on EEC decisions. The Chemical Federation of European Firms is also credited with having been influential in such areas as the recently adopted water purity standards that are to be adopted in Europe (*WER*, Jan. 5, p. 1). The chemical industry is said by knowledgeable sources to have complete access to governments and EEC decision makers.

Other industries have also set up special environmental research and lobbying groups to press their cause in Brussels. One such is the CONCAWE (Conservation of Clean Air and Water, Western Europe) group, which

assists petroleum companies in their study of pollution. And another group is the Environmental Coordinators, which represents different interests in Brussels.

In addition to this direct contact with EEC officials, industries also have impact on EEC rules through their access to national governments who, in turn, represent their views in the EEC process.

**British Expertise**—The British government sees collaboration with industry as essential in its efforts to protect the environment. In the area of waste disposal, for example, where industry is concerned as both producer and disposer of waste materials, the Department of the Environment (DOE) published a paper in March to guide local authorities in their relationships with private industry. It spoke of the need to use the expertise already built up by private industry and defined the areas of collaboration and consultative procedures.

A spokesman for the Confederation of British Industry (CBI) told *WER* he believes Britain compares favorably with most other countries in the amount of prior consultation between industry and government on environmental legislation.

Public Health Acts passed in the 1930's gave local authorities and government inspectorates power to prosecute on health and safety measures arising from industrial practices. This led to the growth of a good infrastructure of communication at both the local and national levels, according to the CBI spokesman.

The CBI and the government's regional Water Authorities formed a combined working party to consider guidelines for the control of trade effluents to public sewers and the charges to be made for them; their findings were published in February.

At the national level, industry is represented on the Royal Commission on Environmental Pollution which reports regularly to the government, and on advisory bodies such as DOE's Waste Management Advisory Council.

Many other examples of joint consultation can be quoted. In February, for example, the Soap and Detergent Association made a new voluntary agreement with the DOE to give advance notification of any new chemicals or changes in ingredients used in their products that might affect sewage treatment processes (*WER*, March 15, p. 6).

Sometimes the system breaks down, of course, due to the irresponsibility of an industry or the inertial or timidity of an inspectorate, or due to the lack of understanding of a material's harmful effects. One case involving all of these was the subject of an inquiry published on March 29 by Britain's Ombudsman. Since 1949 the factory inspectorate had expressed concern about the dangers of asbestos dust in the Acre Mill factory in Yorkshire. But new and tougher regulations based on expanded medical knowledge were not brought out until 1970, too late to prevent the deaths of 40



workers and the probable deaths of many more.

**West Germany**—A system used in the state of Bavaria is being adopted at the West German Federal level. In Bavaria, before any draft law is presented to the legislature, a study is sent to affected industries. They are given six months to express their viewpoints or submit proposals or expert opinions.

A spokesman for the Bavarian State Ministry for Environmental Questions told *WER* that cooperation between industry and government on questions involving land use and environment could be termed as "generally good." This opinion was seconded by a spokesman for the Chamber of Trade and Commerce.

There is a "working group for environmental questions" at the Federal capital of Bonn, which meets twice a year. The working group includes representatives of industry, science, government, citizens organizations and environmental associations. It acts as a clearing house for Federal environmental proposals and permits a wide range of participation in planning.

In Switzerland, government officials and industry agree that the system of preliminary consultation works well. Initial drafts of laws and directives are first circulated to cantonal (state) authorities, industrial federations and other groups for comment.

For example, the draft law on environment that will come up for referendum in June (story this issue) was submitted in pre-draft form nearly two years ago to the Federal Chamber of National Chambers of Commerce (Vorort), as well as to all the cantons. The Vorort was able to consult with 45 local chambers and with 32 professional organizations and to call in experts.

Based on its survey, the Vorort has criticized the "framework" nature of the bill, suggesting instead that legislation would be more effective if it dealt with specific areas, such as water and wastes, separately.

In Austria, there is as yet no law codifying environmental regulations or for consulting with the public or industry on their contents. Plans exist to bring such a law before Parliament this year, but the timetable may be upset due to the press of other business.

The Ministries concerned—Traffic, Health and Public Works—publish regulations in the official Vienna Gazette and convey them to the nine provincial governments. These authorities usually draw the attention of the municipalities in their area, but there seems to be no assurance the regulations are universally observed. Austrians' experience under Hitler makes them specially chary of strong central authority.

Industry, however, is mostly nationalized, which makes enforcement of regulations much easier. Nevertheless, even though they are in effect civil servants, Austrian industrial managers usually denounce these regulations as idealistic, too difficult or expensive to carry out.

**The Netherlands**—The government of The Netherlands consults all interested parties, including industry, in drafting environmental laws. A special environmental

bureau represents organized industries in consultations with the government on environmental matters.

There are two national industrial organizations: the Vereniging Van Nederlandse Ondernemingen (VNO—Association of Netherlands Enterprises) and the Nederlands Christelijk Werkgeversverbond (NCW—Netherlands Association of Christian Employers). These groups cooperate closely in a council. On environmental issues, they use VNO's special bureau, established in 1967, that employs five full-time environmental experts.

Generally speaking there is open debate in The Netherlands on environmental matters, with no reluctance from anyone, including industry, to speak out. This was illustrated recently when the government sent a bill on Noise Nuisance to Parliament for handling later this year (*WER*, Oct. 27, 1975, p. 1). Industries were not satisfied that the interests they presented in their consultations with the government were reflected in the drafting of the bill. Therefore, they submitted to Parliament an open petition urging amendments.

**Danish Cooperation**—The Danish Federation of Industries is pleased with its access to those responsible for drafting the country's environmental laws. And Jorgen Henningsen, deputy director of the Environment Ministry told *WER* "We are gratified with the amount of cooperation we get from industry."

Elo Hartig, department chief of the Federation, travels around to explain why environmental laws must be made, why controls that will cost industry a lot of money are necessary, and how acceptance will bring rewards in the long term. "It is much easier to convince younger people in industry," he told *WER*, "than the older section."

"On the whole, he added, "Danish industry is not frightened of the Environment Ministry created in 1971 or of the laws it has made." The main reason is that before any law is drafted, experts, government ministers, workers' representatives, industrial representatives, all meet to examine the problems."

An example of this approach is the law that came into effect last month on the disposal of chemical wastes. This law was the result of a working group comprised of representatives from the Environment Ministry, Hartig from the industry federation, and representatives of several companies, labor and technical expertise. The group produced a 150-page report last year that became the basis for the law.

Hartig suggested that, because Denmark is a very small country, "it is easier to cooperate as we do. We have been prompt in committing ourselves to programs that enhance the quality of life and diminish pollution. We can discuss without rancor the very real economics of keeping the world clean."

This attention to environment has helped create a good market for Danish pollution control equipment and systems, Hartig said. In 1975 sales of equipment were \$66.5 million.

CONSTANCE CORK, EDWIN BROOK, DAVID FOUQUET  
HENK KERSTING, WILLIAM MAHONEY, BARBARA MASSAM



## In Brief . . .

### Detailed Report Issued on Athens Pollution Problem

Central heating of apartments is responsible for 75 per cent of the sulfur oxide pollution in Athens, followed by industry at 20 per cent and traffic at 5 per cent. This was reported by the Environmental Control Center, a body established in 1973 by the Greek government assisted by the UN Development Program and WHO.

Annual average sulphur dioxide level in the Greek capital was 82 micrograms per cubic meter, with a peak of 112 in central Athens and a lowest point of 34 in the suburbs.

The report also said that photochemical smog in the Athens area is somewhat high, with 50 per cent due to traffic and 25 per cent to central heating. A study of 2,500 children in and around the city showed "slightly more respiratory disorders" for those living in the center city.

Noise pollution is also relatively high in Athens, the report added, with an average of 77.2 decibels in the center. Highest level measured was 92 db near the airport.

The report also said the Saronic Gulf near Athens, which is widely used for swimming, is indeed polluted by industrial waste "but not to a degree provoking danger to public health."

The Center has a \$3.5 million budget of which about \$1 million came from UNDP. It measures air, sea and noise pollution in and around Athens and the results are used by the government in the formation of environmental policy.

### Athens Will Replace Diesels With Trolleys to Cut Pollution

The Greek government is preparing a bill that would require replacement of diesel buses in central Athens with trolley buses. Minister of Transport and Communications George Voyadjis said the measure aims at reducing air and noise pollution in the city. Athens today has 2,000

buses and 150 electric-powered trolleys. The Minister said the changeover will begin in a few months, to be completed within five years. He said most diesel buses are over 13 years old and are "considered responsible for increased air and noise pollution in Athens." The government has already ordered 120 trolley cars from the Soviet Union, to be delivered by the end of this year. Voyadjis also said the bill foresees use of minibuses, which make less noise, for transporting passengers from the city's periphery to its center. Substitution of trolleys for buses will be extended to other Greek cities if it proves successful in Athens.

### Britain Issues Environment Guides for Local Authorities

Britain's Department of the Environment last month issued the first four in a series of papers on waste management to guide local authorities on their new duties under the 1974 Control of Pollution Act. The first paper evaluates reclamation, treatment and disposal of wastes from both the social and economic standpoints. Paper 2 gives latest information in carrying out waste surveys, which are required by the Act but have been shelved due to Britain's economic crisis. It is hoped the local authorities will absorb the complex advice before having to act on it.

Paper 5 deals with the relationship between waste disposal authorities and private industry, pointing out that the Act's provisions depend on collaboration and in some cases on joint activities. This paper recommends that disposal charges by local authorities be realistic both for the sake of industry and the taxpayer. Paper 6 is a technical one dealing specifically with polychlorinated biphenyl (PCB) wastes and making recommendations about their management.

Four more papers are being prepared and there will later also be reports from study groups on specific

hazardous wastes such as asbestos, mercury and tarry wastes.

### Huge Soviet Expedition Probes Environment of Arctic Polar Cap

The largest expedition in the history of Arctic exploration left Leningrad April 5 to probe the polar cap's total environment. More than 1,000 scientists, plus planes, satellites, rockets and ten ships will investigate the atmosphere above the polar cap, as well as the land and drifting ice floes from Greenland to the Bering Strait.

Professor Alexei Tryoshnikov, who heads the Soviet project, declared in an interview with the Soviet news Agency Tass that the expedition hopes its findings will improve weather forecasting in the northern hemisphere. He said measurements will be made simultaneously on land, in the atmosphere, in the ocean and on ice floes. The expedition is the Soviet contribution to a global project sponsored by the UN's World Meteorological Organization (WMO).

### Pakistan Builds Solar Cookers

Mass production of solar cookers is to begin at Pakistan's Peshawar University, with the first device to be on the market by the end of this year. The project was announced by Iqbal Hussain Shah, director of research in the University's Faculty of Engineering, at an International Seminar on Solar Energy Applications.

He said that solar cookers, solar water heaters, solar water desalination and purification plants and heating systems for homes and offices will be the first significant uses of solar energy in Pakistan.

### Oil Spill Blamed for Ferryboat Disaster off Haiti's Coast

An oil spill has been blamed for a



disaster off the coast of Jeremie, Haiti, March 26, in which a ferry caught fire and sank with a loss of at least 150 lives. There were only three survivors. The government said the ferry, enroute from Dame Marie to Port-au-Prince, grossly overloaded with freight and passengers and carrying no lifeboats, lights, radio, lifejackets or navigational aids, ran into a large oil slick covering about two kilometers, six miles off the south coast.

Turbulent seas covered the deck, cargo and passengers with oil, which, according to one of the survivors, the crew, smoking cigarettes, attempted to mop up. A wall of flames engulfed the ferry and it sank within half an hour. Victims either drowned or burned—the survivors, a man and two women, were picked up by a fishing boat.

The slick is attributed to an unknown passing tanker dumping or flushing a large quantity of oil.

### British Corporation Tests Coal Gasification Method

A group of 15 U.S. oil and gas companies is sponsoring a \$10 million research project by the British Gas Corporation that is searching for economic methods for producing gas from coal. Known as the British Gas Slagging Gasifier, the project is being carried out at BGC's Westfield Development Centre in Fife, Scotland. Two extended tests of seven days duration a few weeks ago produced a synthesis gas suited for further conversion to SNG (substitute natural gas) at a rate of 25 million standard cubic feet per day. This is regarded by the researchers as a significant step forward.

Britain's coal gasification technology is advanced—coal resources are rich and likely to be the country's longest lasting source of energy. It is therefore in the national interest to make as diverse use of them as possible, British authorities believe.

### Netherlands Aids Flood Control Program in Colombia

The Netherlands and Colombia have agreed on a joint program to reclaim 2.5 million acres in the basins of the Cauca and Magdalena rivers in central and western Colombia. The first, ten-year stage of the program will be dedicated to flood control for 500,000 acres on the left bank of the Cauca. The Dutch government has earmarked \$2 million to start this project, the Colombian government \$1.7 million. Colombia's Institute of Meteorology, Hydrology and Land Development calculates that soil and flood controls will quintuple agricultural production in this area alone. The Cauca and Magdalena basins cover 63.5 million acres, eight per cent of which is affected by up to six months of severe annual flooding. Three quarters of Colombia's 24 million people live in these basins, and 80 per cent of the Colombian economy depends on its agricultural production.

### Greece Studies Irrigation Plan

The Greek government is studying an irrigation and drainage plan to make productive 2.6 million acres. Minister of Public Works Christoforos Stratos said the plan foresees irrigation of 40,000 acres of new land annually, with drainage improved on a further 5,000 acres. He said the plan will be completed in 20 years and will cost \$3 billion. The World Bank has financed the plan with two approved loans totalling \$70 million. The minister said the plan, mainly in northern Greece, will improve living conditions for Greek farmers and contribute to economic development.

### British Agency Issues Interim Hazardous Waste Report

Britain's Department of the En-

vironment this month issued an interim report on its three-year, \$2.4 million research program on the behavior of hazardous wastes in landfills. A wide range of sites and wastes are being investigated. Because the unsaturated zone beneath a fill site may be important in breaking down pollutants, field studies have been carried out in sand, gravel and chalk sites. Plans are to develop mathematical models to predict contaminant movement in saturated and unsaturated zones. Laboratory experiments and pilot-scale studies are exploring interactions between different wastes and domestic refuse and industrial wastes.

The interim report draws no conclusions or summaries.

### Costa Rica Appeals for Help On Tropical Forest Reserve

Costa Rica's president, Daniel Oduber, has appealed for world aid to help establish Corcovado National Park, the biggest tropical rain forest reserve in Central America and exceptionally rich biologically. The park "represents the most important conservation enterprise Costa Rica has ever undertaken and has the highest priority for our attention," Oduber declared in a letter to the World Wildlife Fund (WWF). The WWF has made preservation of the world's tropical rain forests in Southeast Asia, West Africa and tropical America its main current campaign (*WER*, March 1, p.4).

Last month, the WWF congratulated Norway on the establishment of the Anarjokka National Park and the Nordre Oyeren Nature Reserve as the two largest conservation areas in the country—1,390 sq.km. adjoining Finland's Lemmenjoki Park—and expressed the hope this would lead the way to a future Northern Scandinavian National Park with the possibility of conserving some of Europe's most endangered species, including the wolf and bear.





# World Environment Report

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## OUR FIRST ISSUE

Last week, a friend who teaches at a US university came to the Center for an update on what is happening in the international environment field. He asked about the inter-governmental conference on pollution of the Mediterranean; the UN Conference/Exposition on Human Settlements (Habitat '76) to be held in Vancouver next year; what the Japanese government was spending on pollution control in 1975; how many countries had established environment ministries and a host of other questions.

We were able to fill him in on almost all his queries, but with the publication of *World Environment Report* that kind of piece-meal exchange of information on global environmental developments is replaced by systematic and wide-ranging communication of sought after information.

A faithful reader of *World Environment Report* will have available the most complete coverage of international environment developments published in North America.

Drawing on a global network of correspondents, *WER* will cover significant national environmental legislation, new technology, science, meetings and conferences, the major global issues, environmental trends, research, who is doing what. *WER* will also keep a sharp watch on what UNEP is doing in Nairobi and elsewhere.

The Center for International Environment Information which produces *WER* is a new non-profit institution established with UN support to increase public understanding in North America of global environmental problems.

One of our objectives is to report on developments that may affect the quality of life in North America. Another is to report new and useful approaches to environmental problems that have surfaced elsewhere in the world.

In the long run, we hope to make a substantial contribution to increased public awareness of the critical global environmental issues and the role of science, technology and international cooperation in dealing with them.

*The Editors*

## U.S. FINANCES DROUGHT STUDY IN GHANA

**ACCRA, Ghana**—In an effort to boost Ghana's agricultural production the US Agency for International Development is financing a study of drought and desertification threats here.

Under the auspices of the Ghana Council for Scientific and Industrial Research, a team of experts (four from the US and 13 Ghanians) will seek to determine whether Ghana's resources are being rationally used. Professor N.A.

Tackie, head of the Ghana Academy of Sciences, says the northern savannah areas have been undergoing long dry spells in recent years, but are generally suited for large scale production of grains and livestock. Therefore, besides dealing with the environmental problem, the team will be assisting directly in Ghana's agricultural development. Surplus food produced from the area could be sold to the hungry people of the Sahel, Tackie added.

## IRISH TO SEGREGATE "DIRTY" INDUSTRIES

**DUBLIN**—Spurred by major foreign industrial development the government of the Irish Republic is formulating a comprehensive coastal development policy specifying locations suitable for so called "dirty" industries such as oil refineries, smelter and chemical plants.

Ireland's membership in the European Common Market has attracted foreign companies in droves, many from Japan and North America.

Five proposals to construct oil refineries at various coastal locations and eight other major industrial plants—including oil drilling platform construction sites, an alumina extraction plant by Alcan of Canada and a Japanese smelter—are now pending.

The last of these projects has met particularly strong opposition from environmentalists. Since the recent 600 thousand gallon crude oil spill from the Gulf Oil terminal at Whiddy Island in Bantry Bay, County Cork, opposition to oil refineries is also mounting.

A second major spill occurred in mid-January when a tug and a tanker—the 210,000 ton *Afran Zodiac*—collided while maneuvering to leave the Bay. The incident occurred during a heavy gale, and Gulf was strongly criticized by environmentalists for operating under such conditions. The company replies that it was acting under the advice of its

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marine pilots and that the incident was not a collision, merely a "nudging" of the tanker by the tug.

But the incident spilled 451 tons of bunker fuel (113,000 gal.) which moved onto the scenic north shore, polluting beaches and fishing grounds, and endangering one of Ireland's best-known tourist spots—Glengarriff.

Clean-up will take at least six weeks, according to Gulf officials. The Company is now faced with compensation claims expected to approach \$2.5 million for both spills.

The Irish government has announced it will prosecute Gulf for pollution of territorial waters. Maximum fine under present legislation is only \$60,000, but the Minister responsible, Peter Barry, has declared the fines will be "considerably increased."

### ROADBEDS MADE WITH WASTE PVC COMPOUND

**ORTMAN, Austria**—The Bunzl & Biach A. G. won a patent here for a new compound of waste and scrap polyvinyl chloride (PVC), bitumen, gravel and cement that will serve as the wear layer for public roads. The advantage for the company is that annually more than 30,000 tons of otherwise unusable waste PVC shreds is being utilized.

The inventor of this process is Rudolf Hermersan. The Federal Ministry for Construction and Technology has granted \$86,250 to the company for further development of the idea. The semi-official Federal Institute for Basic and Road Construction Research and the Semperid A. G., Austria's biggest rubber-asbestos-plastics concern, are partners in this research work.

The Federal Chamber of Economics has additionally allocated \$43,125 for research in the same area by the Federal Research and Development Institution Arsenal.

Blending is effected at temperatures that allow commercial mixing machines to be used. This adds to the possibilities of early introduction of the process on a commercial basis. Technical details have not yet been revealed.

### PAKISTAN TO CONTROL SALT IN CROP LANDS

**ISLAMABAD, Pakistan**—The southern province of Sind has been granted \$230 million by the Pakistan government to implement an accelerated program to control salt and water-logging problems in irrigated land.

It is estimated that over a period of 11 years the state-wide program will cost \$550 million. In Sind the entire cultivatable irrigated 13.2 million acres is affected by salinity, while 8 million acres is water-logged.

Much of the heavy equipment required is expected to be imported. Operations are being supervised by the state-owned West Pakistan Water and Power Development Authority (address: The Mall, Lahore, Pakistan).

### ALGERIA STARTS REFORESTATION PROJECTS

**ALGIERS, Algeria**—A number of anti-erosion and reforestation programs have been started by the Algerian National Forests Office. The programs are concentrated in the prefecture of Saida about 500 km southwest of Algiers in the dry steppe region.

Forest belts surrounding villages of El Biodh, Mecheria

and Naama covering 300 hectares are under way. In the community of Mecheria, about 200 km south of Saida, 6,000 workers have been hired to plant trees and animal feed, greatly alleviating that area's unemployment problem as well.

Authorities hope to create an improved microclimate and stop erosion through the programs so that the steppe shepherds and esparto (long grass used in weaving) farmers may become self sufficient.

### AMBITIOUS COLOMBIAN CODE—CAN IT WORK?

**BOGOTA**—Colombia has decreed what is believed to be the most comprehensive ecological code ever written in South America. Authored by 30 international experts aided by the United Nation's Food & Agricultural Organization, the 340-article code covers every aspect of Colombian life that might contribute to pollution.

Colombian ecologists doubt, however, that the government can enforce more than a fraction of the new legislation, as the wildlife service has neither the financial resources nor the manpower to police the isolated lowlands and jungle that make up 55 per cent of Colombia's territory.

Still, the code, which was one and a half years in the writing, is being hailed as a model for other developing nations.

The code's principal emphasis is on education with a special budget for radio and television campaigns to explain the importance of preserving the environment. The code also establishes a series of ecology courses for primary, high school and university students and creates a special environment militia in which volunteers will serve for one year.

To prevent the environment's further deterioration the code offers a series of economic incentives such as tariff reductions for anti-pollution equipment used by industry and transportation. It is the sweetener in an otherwise tough code that establishes prohibitions on mining, industry, construction, hunting and fishing.

▲ **Water Rights**—Among its more unusual features the code gives the government the right to declare any area a "protected landscape" with strict government supervision. Private water rights have been reinterpreted to mean only waters which are borne on and do not pass the boundaries of private property. Even this right is limited by a three-year deadline to utilize the water. Otherwise, it will be expropriated by the government for the community's benefit.

Earlier laws dealing with the protection of wildlife and forests were ineffective. Colombian peasants still prefer the burn-and-hack method to clear virgin land, and coastal fishermen think nothing of dropping dynamite into a bay where people are swimming. Colombia's varied wildlife has been decimated, and such species as the Andean condor are in danger of extinction. Once important waterways such as the Bogota River are floating garbage dumps.

Consequently, there is little hope that the code will alter Colombian habits in the immediate future. On the other hand, it does set a new standard, particularly in the neglected field of ecology education.

*Penny Lernoux  
Colombia*



## ACTION URGED ON MARMARA POLLUTION

**ISTANBUL**—Twenty-one mayors as well as university professors, experts and government representatives attended a two-day environment conference—the first ever held in Turkey—in the city of Izmit, 60 miles east of here to discuss the worsening pollution of the Sea of Marmara.

The region discussed includes the developing industrial centers in Izmit and surrounding towns as well as metropolitan Istanbul.

Speakers at the conference recalled that the Sea of Marmara was originally intended to become the Turkish "Riviera" featuring new tourist attractions, its natural beauty, abundant fish and moderate climate. Instead during the last decade it has turned into Turkey's main industrial center, mostly in the Istanbul and Izmit areas, with hundreds of factories polluting the sea and air.

At the conference the mayors of the area urged the government to take immediate and effective measures to solve the problem. One suggestion was the creation of a special ministry. New legislation to empower local city officials to take necessary measures was also called for.

The conference is the first sign of official Turkish awareness of the seriousness of the country's environmental problems.

Experts told the conference that if immediate measures are not taken, the Marmara region will become uninhabitable within the next 15 years.

Even Istanbul, with a population of three million, does not have a modern sewage system, and most of its beaches on the Sea of Marmara are now polluted.

Until the 1960's Turkey's best quality fish came from the Marmara area. It was inexpensive, and some was exported. But experts reported at the conference that, as a result of industrial pollution, the Sea is losing its fish, and many fishermen are giving up their jobs and going into industry.

Izmit mayor Erol Kose disclosed the establishment of an Air and Sea Environment Patrol equipped with helicopters to inspect the pollution in the region. The patrolling teams will report to the municipal authorities concerned, he said.

Experts agree, however, that as long as the government does not draw up a courageous plan for the industrial cities in the Marmara region and as long as Parliament does not pass new legislation giving municipal authorities the powers to effectively combat pollution, aerial inspection will not produce any results.

*Sam Cohen  
Turkey*

## JAPAN INCREASES POLLUTION CONTROL \$\$

**TOKYO**—Despite a deep economic recession that is now about a year old, Japanese industrialists are today investing heavily in pollution control equipment. At the present time, according to government reports, more than 16 per cent of all capital spending in Japan is going into anti-pollution programs. Projections for fiscal 1975 anticipate spending on pollution control equipment to approach 19 per cent.

Recent data supplied by Japan's Ministry of International

Trade and Industry (MITI) estimates that investments in pollution control will continue to expand for the remainder of the decade, another indication that the Japanese are taking environmental protection seriously, according to the Ministry.

MITI authorities in November predicted, for example, that business spending on pollution control programs this fiscal year, ending on March 31, will total \$3.4 billion on an actual construction basis. This would be more than a two-fold increase over similar expenditures in fiscal 1973.

Data also collected by MITI reveals that Japan's business community is planning to spend slightly more than \$4.8 billion on anti-pollution equipment and projects in fiscal 1975.

Although Japanese industry began its pollution control program by purchasing and installing single-unit devices such as dust collectors, incinerators, filters and the like, today's programs have evolved into construction of fully integrated plants and total systems encompassing everything from production to complete reclamation of waste, as in the Kashima industrial complex.

Some of the heaviest anti-pollution spending by the Japanese is the result of active development of closed systems and recycling systems. In addition expenditures are rising in the engineering consulting area.

In addition to this spending by industry, the Japanese government spent nearly \$3 billion on improving the environment during 1974—more than \$1 billion of it directly on specific projects such as sewage systems, and nearly \$2 billion in support of local government programs.

*A. E. Cullison  
Japan*

## NEW LAND FROM THE SEA FOR BANGLADESH

**DACCA, Bangladesh**—More than 40 thousand square miles of new land is gradually forming along the southern coast of Bangladesh in the Bay of Bengal, and authorities here plan a physical survey of it later this year.

Prime Minister Sheikh Mujibur Rahman has declared that at least four thousand square miles will be reclaimed from the sea within the next few years.

Experts, however, say that positive ideas as to the extent and nature of the landmass formation will not be available for about 15 years. They say that the land is being formed largely from sediment—about 15 million tons—carried annually by the country's three river systems.

The total area of Bangladesh today is 55 thousand square miles, with three sides bordered by India and one side by the Bay of Bengal and Burma.

Photos taken early in 1973 from the US Earth Resources Technology Satellite (ERTS) give a graphic picture of the gradual formation of the mass. The pictures also clearly indicate that some of the islands along the mouths of the Ganges River have neared the mainland, while Bhola Island has shed some of its northern tip.

The first positive information about the new landmass came from a series of pictures taken from ERTS six years ago. These pictures indicate that the sediments, which have been shifted by tidal waves from time to time, have gradually taken a definite shape in recent years.





## HOPES ARE HIGH FOR ACTION ON CLEANING UP THE MEDITERRANEAN SEA

**BARCELONA**—One more step along the tortuous road to a cleaner Mediterranean Sea is underway here, in the form of an intergovernmental meeting being held under the auspices of the United Nations Environmental Programme (UNEP).

Despite the formidable hurdles to achieving international cooperation in stopping the deterioration of this vital body of water, UNEP officials have high hopes that solid progress will emerge from the Barcelona meeting. It is expected this progress will take the form of a request to UNEP by the government representatives to prepare the final legal form of a Convention and a series of separate protocols. These will be presented for ratification at a meeting of plenipotentiaries, possibly as early as September.

The protocols will deal with such specific subjects as pollution emergencies, ocean dumping of wastes, land-based pollution, pollution related to the operation of ships, pollution related to seabed exploration and exploitation.

▲ **Careful Groundwork**—The groundwork for these documents has been laid carefully by UNEP and other interested UN agencies, particularly the Food and Agriculture Organization, at a series of meetings and workshops held

for the most part during 1974. Many observers, including the U.S. State Department, feel the pollution of the Mediterranean is exactly the kind of big, discrete specific issue UNEP can and should be able to deal with most effectively.

The obstacles to action are obvious. On the one hand, the developing countries on the southern and eastern shores of the Mediterranean, such as Algeria, regard the question of pollution as secondary to their drive toward an improved standard of living. On the other hand, the more-industrialized nations to the north and west, of which Italy is a prime example, have so far shown little disposition to cut down on marine discharge of wastes.

▲ **Political Obstacles**—Complicating matters further, of course, is the worsening feud between the Arab nations and the Israelis—the Arabs were expected to insist on inviting the Palestine Liberation Organization to take part in the Barcelona meeting. The final touch is the presence as observers of the Soviet Union, the United States and Great Britain, all anxious to maintain their military and commercial use of the Mediterranean.

But despite the potential for disruption, evidence is strong that the participants are committed to constructive

### HOW SERIOUS IS IT . . . ?

WER asked its correspondents in Mediterranean countries to report on how serious the pollution problem is. Here is a roundup of their replies:

**Italy's** 55.5 million people account for more than half the population of the Mediterranean region, and it is rapidly becoming a big industrial power.

Untreated sewage is the major problem in the southern half of the peninsula and in Sicily and Sardinia, while industrial pollution is strong in the north. The worst area is the northern Adriatic, a region of shallow water and weak currents, which receives pollution from the Po River after its journey through the industrial north, as well as from Venice and northern Yugoslavia.

Other polluted areas are the Bay of Naples and areas adjacent to the big cities of Rome, Florence and Bari.

Fisheries are affected by migration of the catch and by high mercury levels, while tourism is affected by the closing of some favored beaches.

Coastal waters near Barcelona and Bilbao, **Spain** are heavily polluted by industrial and shipping waste.

Rivers running into the Mediterranean from **France** also carry a heavy load of industrial waste.

**Yugoslavia**, in the midst of industrializing, is also adding its share of industrial waste to the sea.

There is little pollution flowing into the sea from **Turkey** because southern Turkey is not heavily industrialized. But this area is plagued by oil tanker waste and spillage.

Turkish officials report finding litter from Beirut, **Lebanon**, washing up on Turkish beaches. Four of five ships passing Turkey's Mediterranean coast are foreign, officials say, and tanker pollution has begun to take its toll on the Turkish fishing industry.

Some areas of Turkey's coast are still considered a

tourist paradise, but increasing naval traffic, urbanization and the influx of tourists and new industries are expected to bring serious environmental difficulties.

**Cyprus** sources report that oil spills are also a major problem there. Syrian and Lebanese officials concur, saying their coastal waters have been severely polluted by oil tankers.

**Egypt** is suffering from a shortage of fish, but this is not due to pollution of the Mediterranean. The Aswan Dam blocked the flow of vital nutrients to fish swimming off the Nile Delta. The schools migrated north, ironically, settling along the Israeli coast and providing Israel with a fledgling fishing industry.

"Now our own pollution is killing them," the chief of **Israel's** Public Council for Prevention of Pollution, David Sivan, says. Israel's coastal waters are already befouled with raw sewage and industrial wastes pumped directly into the sea from shoreline cities and factory complexes. Officials say the country's 250-mile shoreline, now blotched with tar and garbage, no longer attracts tourists. Many beaches between Tel Aviv and Haifa have been closed.

Eastern Mediterranean offshore currents run south to north. If the Egyptians reopen the Suez Canal as planned in 1976, Israel's Mediterranean coastline can expect oil tanker spillage to be carried north by the currents to Israeli shores.

Although tar from oil tanker discharge is present on most of **Algeria's** 700 miles of beaches, and domestic litter (old tires, plastic containers, empty cans) is thickly scattered along the coastal seabed near the big cities, fish are still plentiful. But since raw sewage drains into the sea all along the Algerian coastline, beaches are polluted, and bathing is forbidden at Algiers and suburban beaches.



action. Even the PLO issue was expected to be resolved with the Palestinians being seated as observers, and nobody walking out in protest.

The severity and the nature of the Mediterranean problem depends on your vantage point. In the northwest basin, the problems are those of industrial discharge, heavy metals and untreated sewage. But in the eastern basin, airborne pesticides, agricultural runoff and disease pathogens are more significant. Another problem is spills and ballast discharge from tankers, concern for which is increasing in anticipation of the reopening of the Suez Canal. Even so, most governments regard the tanker problem not as a threat to health, but mainly as a nuisance for tourism.

▲ **Research**—To pin down these problems more exactly, UNEP also hopes the Barcelona meeting will give the go-ahead for seven research and monitoring projects proposed at an international workshop on marine pollution held in Monaco last September. These projects include baseline studies and monitoring of oil and petroleum hydrocarbons in the waters, of metals, particularly mercury, in marine organisms, and of DDT, PCB's and other chlorinated hydrocarbons in marine organisms.

The proposed research projects include a study of the effects of pollutants on marine organisms, a study of the effects of pollutants on marine communities and ecosystems, a study of coastal transport of pollutants, and a study of coastal water quality control.

UNEP has identified the institutions, mainly in the developed countries, such as Italy, and France, that are now capable of performing this work, as well as the institutions in the less-developed Mediterranean countries that could take part with some additional training and equipment. Cost of this additional training and equipment is estimated at about \$1 million/year over two years, which would come out of the UNEP Fund. Cost of the actual programs would be borne by the countries where the institutions are located.

Once the Mediterranean program has progressed to the point where actual construction or improvement of waste treatment facilities is required, funding will have to come to some extent from such agencies as the World Bank or the UN Development Program.

## BIBLICAL LANDMARKS SCARRED BY POLLUTION

**TIBERIAS, Israel**—Two of the Bible's most famous landmarks—the River Jordan and the Sea of Galilee—are threatened by pollution and may soon have suffered irreversible damage unless quick action is taken, Israeli conservationists warn.

Experts here predict that the thousands of tons of nitrates, fertilized soil, industrial waste and raw sewage dumped monthly into the Jordan and the Galilee may, in several years, choke the lake and its principal artery. In a desert country where the entire population receives at least part of its drinking water from the Jordan-fed Galilee, the situation has become grave, despite recent government anti-pollution measures.

"We are approaching the red line," warns Haim Tsaban, a government conservation specialist and member of an 11-person committee fighting pollution of the lake where Jesus

is said to have walked and the river in which the Bible says he was baptized.

▲ **War Zone Nearby**—The sea, 686 feet below sea level and surrounded by Christian holy sites, lies only 20 miles from the tense Golan Heights battlefront. During the October 1973 war, Syrian and Israeli jets battled over its waters and hundreds of spent artillery shells lie at its bottom.

Still, tourists—on holidays as many as 80 thousand at a time—flock to the lake for its mild year-round climate. Their picnic debris is often left behind on the shore. More pollution comes from irrigation pumps and motor boats spilling oil into the water. Crop dusting planes spraying nearby fields often accidentally unload some of their poison over the lake, Tsaban says.

Between the Jordan headwaters and the point where it feeds into the lake, Israeli kibbutzim fill the river with sewage and industrial waste, fish pond drainage and dirty irrigation water.

Nitrates, phosphates and organic soil that flow down the river have soured the Galilee waters and thickened the lake algae to a point where the chemical balance of the water threatens to be upset, depriving fish of vital oxygen, Tsaban says.

The Israeli government instituted several projects to save the country's major source of fresh water after an ecological survey in 1970 showed the lake was being strangled.

Law requires surrounding farms to treat their fertilizer-laden water and recycle it for irrigation instead of dumping it into the Jordan, thus cutting the flow of organic material at its source.

The government also plans to build several sewage treatment plants and already slaps violators with heavy fines for littering and operating boats on the lake without anti-pollution regulators. There is also a blueprint to build a dike around the lake to stop erosion of organic soil from surrounding fields.

But Tsaban said the new measures are not happening fast enough, and more government subsidies are needed to help the kibbutzim set up water recycling facilities. He also urged the government to educate Israelis to change their take-it-for-granted attitude of neglect.

*Jonathan Broder  
Israel*

## ALGERIAN DAM TO MAKE THE DESERT BLOOM

**ALGIERS, Algeria**—An extensive land reclamation program which began in 1969 with the building of the Djorf Torba dam on the Oued (Wadi) Ghir in south western Algeria is half completed.

Until the dam was built, the Oued Ghir, which rises on the southern flanks of the Moroccan Atlas, caused immense damage during flood season and dried up to a trickle in the summer. The artificial lake created by the dam has already altered the local climate, even providing edible fish.

By 1977, 6000 hectares of formerly stoney desert will be in cultivation, growing sunflowers, cotton, cereals and animal feed. Already, 110 km of road, 46 km of irrigation canals and 60 km of drainage canals have been built. The American firm Morrison and Knudsen has undertaken irri-



gation and land reclamation of 16,000 hectares in the area south of Abadla, just south of the dam on the Oued Ghir, at a cost to the Algerian government of \$3.5 billion.

Thus a desert area, unable to support more than a few

nomads and miserable sedentaries will become productive, halting the Saharan population's drift to the cities in the north.

## CLEAN WATER SUPPLY TOP PRIORITY FOR COMMON MARKET ENVIRONMENT PACKAGE

**BRUSSELS**—Maintaining an adequate supply of clean water in Europe has been and will continue to be the top priority of the European Common Market's emerging environmental program.

One measure recently enacted by a meeting of European Community environmental ministers is a decade-long plan aimed at assuring sources of drinking water in the face of mounting water pollution. Three other actions taken at the year-end meeting are also partly designed to combat water pollution.

These measures were the first concrete steps taken by the nine-nation European Economic Community (EEC) to implement a broad group environmental program first approved in principle in 1973. Although the individual EEC member countries have had their own environmental action programs for years, the growing Community-wide activity represents an awareness that some problems can better be tackled on a regional or international basis.

As a result, it is foreseen that there will be an increasing number of Community-scale regulations, recommendations and studies originating in Brussels to be applied throughout the EEC. One indication of the increasing tempo of work at the Community level is the decision of the European environmental ministers to meet twice a year to set policy instead of their customary annual gatherings.

▲ **Top Priority**—Looking ahead to the Community's environmental orientation in the coming year, the head of the EEC's environmental protection service recently told *World Environment Report* that water would "incontestably" continue to be its top priority. He said that additional legislative proposals were being studied on bathing and irrigation water standards and on possible undertakings in problems related to coastal pollution.

The 10-year plan enacted by the ministers to guarantee the cleanliness of surface waters used for drinking water is expected to have a major impact on industries using the water for waste disposal or transportation. Rivers like the Rhine first flow through industrial areas in France and Germany then on to the Benelux nations where it is a source of drinking water.

Application of the standards, which classify drinking water in three different categories based on the degree of pollution and purification required, will begin in two years. While individual member countries will verify that the EEC purity standards are met, the EEC Commission in Brussels will have to approve exceptions from these standards.

▲ **Major Construction**—Officials see direct consequences of this measure for plants on affected rivers and lakes and also for firms manufacturing purification equipment. A major European effort in construction of water treatment plants is expected in the next few years.

Another major regulation recently enacted involving water deals with the control of waste oil disposal. European experts have estimated that about 20 per cent of industrial

water pollution stems from oil disposal. A system of licensing and disposal standards is expected to affect virtually all European oil users above the small garage level when it becomes applicable in two years.

In the future waste oil disposal will have to be handled by licensed firms specializing in oil recycling. Such firms already exist in Germany, France and Italy, but in other countries this may bring about the creation of an entirely new industry. Financial aid to launch such firms where they do not now exist is also foreseen in the legislation.

▲ **Polluter Pays**—The environmental officials also agreed to recommend that the EEC countries coordinate their efforts in the application of the "polluter pays" principle. This policy, originated by the Organization for Economic Cooperation and Development (OECD) and adopted by the EEC, would require sources of pollution to bear remedial or preventive costs.

While it would not prevent polluters from passing clean-up costs to their customers, EEC officials hope that such costs would have to be recognized as part of doing business in a competitive environment.

The aim of the EEC recommendation is to have member countries apply this principle in an even, coordinated fashion to avoid national differences that could be exploited. EEC officials feel that one problem still unresolved in this sector is the determination of civil liability in cases involving international pollution. This is of particular importance in the Community, where the source of pollution affecting one country may be up-river in another.

Another measure that is expected to have an indirect effect on water conditions in the Community is a resolution adopted by the ministers that commits the EEC countries to observing sound environmental practices while developing new sources of energy. While only a statement of general principle, the act is seen as nevertheless binding the EEC not to develop new energy supplies haphazardly and is expected to have a direct impact on nuclear plant construction and thermal pollution.

*David Fouquet  
Belgium*

## AUSTRIA DRAFTS ENVIRONMENTAL LAW

**VIENNA**—Insiders here believe that Austria's first environmental protection law will reach the Vienna Diet early next fall. The legislation presently being drafted is of particular importance to areas of dense population and industrialization, said Dr. Otto Lauer, head of Vienna's environmental department.

The city of Vienna has begun drafting its own program to analyze the pollution dangers that follow in the wake of inter-city migration.





## MOOD IS CONFIDENT AS UNEP APPROACHES ITS THIRD GOVERNING COUNCIL

**UNITED NATIONS**—The recently-concluded "informal consultations" between the Secretariat of the UN Environment Programme (UNEP) and members of the agency's Governing Council indicate that there will be no serious problems with the new program UNEP will present to the April meeting of the Council. Representatives of 40 countries met for four days at UN Headquarters, theoretically in their private capacities, to examine draft documents describing projects to be carried out over the next three years and the budgets for these projects.

▲ **Priorities**—The priority areas for action already designated by the Governing Council at its meeting in Nairobi last March remain unchanged. The major efforts focus on human settlements and habitat; environment and development; conservation, management and control of land, water and wildlife; oceans, energy. In the functional area, Earthwatch (Global Environmental Monitoring System and the International Referral System for Sources of Environmental Information), environmental management, information, training and technical assistance are at the top of the agenda.

While there was general approval of the program—especially the high quality of the presentation—there was criticism of UNEP's tendency to disperse its limited resources on a wide variety of projects. Since 1973 the Environment Fund (over \$100 million pledged) has underwritten over 200 projects. Most of these were for planning purposes, expert meetings, intergovernmental conferences, research and seminars, in the major subject areas out of which would come concrete proposals for action by UNEP, by other UN agencies and by governments. Although recognizing the need for this kind of groundwork, some representatives told Dr. Mostafa Tolba, UNEP's Deputy Executive Director, who presided, that what is needed now is action and practical results.

A number of countries apparently felt that they were not kept sufficiently informed about UNEP activities and urged that the agency establish more effective communications with member governments. They touched a sensitive point for UNEP which has encountered difficulties keeping open its communication lines from Nairobi to the rest of the world.

The full-dress Council meeting in April will be a critical one for UNEP. Governments will be looking for results from Maurice Strong and his staff, who have been laboring under difficult conditions—now just about licked. A full staff of qualified professionals is at last on the scene in the modern tower office building that houses UNEP in Nairobi. The senior posts have been filled. The latest appointment is Dr. Francesco Sella of Italy, a distinguished physicist and formerly director of the UN's highly regarded Scientific Committee on the Effects of Atomic Radiation, to oversee the establishment of the Global Environmental Monitoring System (GEMS). Another key appointment: West German civil servant Hans Mollenhauer as head of Programme Division I which covers such subjects as human health, chemical and other pollutants, toxicology, oceans, energy, natural disasters and climate changes.

▲ **Strong's Future**—The Council will certainly discuss—formally or informally—the question of Strong's successor. It is common knowledge at the UN that Strong is about

ready to leave UNEP and his probable successor will be the Peruvian envoy to the UN, Dr. Javier Pérez de Cuellar. Strong, however, is expected to stay at his job through the Governing Council meeting and most likely to the end of 1975 in order to ensure an orderly transition. As his next assignment he will probably be named to head the newly-created World Food Council.

Strong is known to believe that UNEP is entering a new phase and could use new leadership. He has told friends that UNEP has reached the point where its institutional capacity to digest new initiatives will be limited in the next few years. What is now needed is not so much a person who can promote UNEP and the concept of global environmental interdependence, but a good steady hand who can protect UNEP's highly qualified scientists and technicians from political pressures and enable them to do the job.

▲ **Projects**—Both Strong and UNEP approach the Third Governing Council meeting with confidence. The agency has already achieved some important results: Earthwatch—the global monitoring and information dissemination system—is underway. So are plans for catalytic model human settlements, with actual construction expected to begin shortly. And hundreds of experts are now at work on global strategies for energy supply, desert reclamation, pesticide controls for management of the world's forests and woodlands, of water resources, preservation of the oceans and other ecological problems. UNEP is beginning to work closely with industry to explore practical ways to reduce global pollution. And it is pushing countries bordering the Mediterranean



## STRONG HAILS OUR NEW VENTURE

Public understanding of the issues is the critical element in mankind's efforts to preserve and enhance the global environment. Without this understanding, governments are unlikely to make the tough and necessary decisions that must be made to preserve our "Only One Earth."

The Stockholm Conference recognized the importance of an informed public opinion, and the governing Council of the UN Environment Programme has given high priority to establishing programs that would reach millions of people around the world with information about environmental issues.

That is why I welcome the appearance of *World Environment Report*. Publication of the *Report* is an important initiative and can do much to increase public understanding in North America of global environmental problems and what must be done to deal with them.

I particularly welcome your commitment to report on the activities of UNEP and I can assure you that *World Environment Report* will receive our full cooperation in this respect.

My best wishes for success in this important undertaking.

Maurice F. Strong  
Executive Director  
UN Environment Programme



towards cooperative action to save their sea from environmental destruction (See p. 4).

As Strong himself put it after the last Governing Council meeting, "We got everything we asked for—all the posts, the budget and the leeway. We are moving from organization to implementation. Now, the governments expect performance."

The 58 members of the Council will be looking to see how good that performance has been.

#### DENMARK DELAYS FUEL OIL SULPHUR LIMITS

**COPENHAGEN** At the behest of oil companies, the Danish government has extended the time limit for cleaner heavy fuel oil.

The new regulations requiring fuel oil to contain no more than 2.5 per cent sulphur as of October 1, were suspended for six months. The regulation of light fuel oil, mostly used for home heating, went into effect October 1. It may contain no more than 0.8 per cent sulphur.

The oil companies pleaded that uncertainty on the international oil market might prevent their obtaining enough of the low-sulphur oil. They estimate that 20 per cent of the fuel oil burned during that six month period will contain more than 2.5 per cent sulphur.

#### TOXIC CHEMICAL REGISTER URGED

**BILTHOVEN, The Netherlands** Experts from 27 countries meeting here have formulated a plan for an International Register of Potentially Toxic Chemicals (IRPTC) to be presented by Maurice Strong, Executive Director of the UN Environment Programme (UNEP), to UNEP's Governing Council at its April meeting.

The 57 experts call for the establishment of a central unit linking the network of already existing and planned national information centers where users can obtain quick information regarding the toxicity of chemical substances.

"Not only is the number of environmentally significant chemicals increasing at a disturbing rate, but we are experiencing likewise a phenomenal information increase in the characteristics and effects of such substances stored in individual collections," the director of UNEP's division of geophysics, global pollution and health, H.P. Mollenhauer, said.

The proposed file will be open to UN member states, UNEP, other members of the UN system, organizations concerned with the management of the environment, scientists and chemical industries.

▲ **Network Better**—Rejected at the workshop was the idea of replacing the many systems now existing with a single central register. The experts felt the network of cooperating data collections operated by a central unit could better serve the variety of demands for information.

The workshop's report concedes that a single central file would be more efficient, but concludes its realization is doubtful because of legal, administrative, economic and

technical considerations which would prevent some sources from contributing all of their data to such a system. Nevertheless, the report suggests that at the same time the network should establish its own files.

The report also suggests that the central files begin with an intensive program (few chemicals with all available attributes) to be followed by an extensive program (many chemicals with a restricted list of attributes).

Suggested categories of attributes to be stored in an IRPTC include: physics, chemistry, production, use and disposal, transformations and environmental pathways, toxicity, and legislative and other regulatory action. The IRPTC proposal would include both short- and long-term toxicity.

The center is envisioned as a relatively small organization, a focal point for the national centers. Plans for financing the system will be dealt with by the UNEP council, which already has allocated \$250,000 for the preparatory work and the study.

*H. G. Kersting  
The Netherlands*

#### DENMARK STRICTLY LIMITS FOOD ADDITIVES

**COPENHAGEN** Denmark's new series of environmental protection laws include what are probably the world's most stringent regulations on food production.

The Danish government has reversed the usual procedure. Instead of listing prohibited additives, the food law lists 245 categories which can be used. No exceptions are permitted without special authorization from the National Food Institute.

The provisions of the Act do not apply to Danish food products to be exported, but they do apply to imports. "Danish importers bear the responsibility of seeing that all foods imported from abroad comply with the new regulations," a spokesman for the Food Institute said.

"This does not mean we want the secret recipes for goods, but if additives are used which are not on the approved list authorization must be sought from the National Food Institute," he added.

The Minister for Environmental Protection may make exceptions, but officials indicate these will be rare. Food produced outside Denmark and in transit to a third country is exempt.

Initiative for research into the use of food additives was taken by Sweden and Denmark in response to a suggestion from the UN's Food and Agricultural Organization and World Health Organization in 1956. The new legislation results from 18 years of research.

Attention is now being centered on food flavorings, the Food Institute representative said. Even natural colorings are being scrutinized.

Coloring from tomatoes or potatoes, for instance, may not be entirely safe, the spokesman explained.

"Our norm is to evaluate the milligrams per kilogram of body weight per day of food additives which can be taken throughout a normal life without risk," the spokesman said.