STUDENTS & OTHER PILGRIMS POPULATE TENT CITY SET UP AT STOCKHOLM'S ABANDONED SKARPNÄCK AIRPORT

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ENVIRONMENT

A Stockholm Notebook

Every day there were new committee meetings and new resolutions to consider, but many interesting aspects of the U.N. Conference on the Human Environment never came to any vote. As delegates from 114 nations prepared to leave Stockholm last week, TIME *Correspondent Friedel Ungeheuer cabled some impressions:*

Motherhood was almost a dirty word here—but it had its defenders. At the scientists' Environment Forum, Stanford Biologist Paul Ehrlich blamed half the world's environmental problems on increases in population. A woman biologist from Nigeria, aided by four burly colleagues, startled the audience by seizing Ehrlich's microphone and declaring that birth control was merely a way for the industrial powers to remain rich by preserving the status quo. Peace was restored only after Ehrlich conceded that the U.S. should curb its own consumption of natural resources before urging population controls on developing countries. Brazilian Economist Josué de Castro fumes at the very mention of birth control. "Genocide of the unborn!" he charges.

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Uniformed guards with dogs kept a wary watch on the tent city erected by youthful environmentalists at the abandoned airport of Skarpnäck, but the violent demonstrations the police feared never came. Instead, the students put on gentle "eco-skits" to dramatize "eco-catastrophes." In one, for example, a girl painted as a skeleton and accompanied by drums and cymbals danced a warning about the radioactive fallout from French nuclear-bomb tests in the Pacific. Total damage to property caused by such activities: one broken window.

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At noon, many people gathered at the Grand Hotel, a pink elephant of a building with a view over the port (impressively clean) and the Royal Palace (depressingly severe). The reason was simple. The U.S. Population Institute served a delicious free lunch there: marinated river salmon with sweet mustard, herring in fresh cream, tiny meat balls, thick slices of rare roast beef. To ask an environmentalist to dine, however, is to ask for trouble. Dr. Samuel Epstein, the Cleveland toxicologist who first warned of the harmful effects of the detergent component nitrilotriacetic acid (NTA), contended that the beef was full of cancer-causing aflatoxins. "Don't know why the Swedes don't get rid of them," Epstein said. "They are so easy to detect—fluorescent."

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Economist Barbara Ward on the trend of speeches: "Truth is moving to platitude with alarming speed."

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The conferees fretted continually about the consequences of industrialization. Microbiologist René Dubos, generally the most optimistic of the U.S.'s major ecologists, said that modern farmers are putting more energy into the soil (in the form of mechanization, fertilizers and pesticides) than they are taking out in the form of bumper crops. By 1987, Dubos predicted, such practices will cause enough pollution and depletion of resources to limit further growth. He offered the odd analogy of the medieval church builders in France, who decided to end their rivalry after the highest cathedral, in Beauvais, twice collapsed. "Every technology has its limits," said Dubos.

But talk of slowing industrialization was anathema to the developing nations. The Chinese delegation, led by Tang Ke, Minister of Fuel, had an answer. The world's resources are "inexhaustible," he said, provided all nations follow the teachings of Mao Tse-tung.

There was less confidence in a special report signed by 2,200 scientists from 23 nations: "We do not really know the full dimensions of either our problems or their solutions."

The astonishing thing about the official meetings was that almost all the recommendations on the agenda were approved, though often watered down. There is very little that the U.N. can actually do to enforce them, however—to make Japan and Russia (whose delegation never appeared after all) stop killing whales, or to make France and China stop testing nuclear weapons. "Every country has the right to protect itself from imperialism," insisted the Chinese. No matter. The conferees urged creation of a new U.N. office to coordinate international environmental activities and a global system to monitor the spread of pollutants. What effect will that have? The image that comes to mind is of a man who is given a thermometer and a fever chart to see him through a serious illness.

Perhaps no more concrete accomplishments could have been expected from a meeting that was necessarily divided by so many conflicting interests: the rich *v.* the poor nations, East *v.* West, free *v.* Communist world. Yet the conference showed that a start could be made on a problem that has been too long ignored.

Watching the Earth

The Stockholm conference has approved a global system for the monitoring of pollution. Next month, as a forerunner of such a system, the U.S. plans to launch an experimental satellite, known as ERTS (for Earth Resources Technology Satellite). A stubby, 1,965-lb. package that resembles an overgrown moth, the satellite will be equipped with three television cameras, a multi-wave-length sensor and a data collection system that can relay environmental information from as many as 1,000 automatic monitoring stations on earth. If the test is successful, ERTS-type orbiters could be used to sound an alarm whenever there is a threat of serious environmental danger: contamination of the seas, climatic changes, even volcanic eruptions.

Fired to an altitude of 492 nautical miles, the satellite is expected to operate for a year in a near-polar orbit that runs almost parallel to the earth's axis of rotation. Sweeping down from high above the Arctic Circle to Antarctica, it will then head back north every 103 minutes. This orbit has an important advantage: it will bring the spacecraft back over the same spot on earth every 18 days at almost exactly the same time of day. Thus, ERTS's photographs, each covering a 100-by-100-mile square, will be taken at each particular site under lighting conditions that remain unchanged except for the gradual seasonal variations in the angle of the sun and different cloud covers. Such consistency gives ERTS a unique ability to spot changes on the earth.

Built by General Electric for NASA's Goddard Space Flight Center under a $174.6 million program, ERTS cannot see objects smaller than 300 ft. across, but it has very acute color perception. Each of its three RCA TV cameras responds to a distinctly different wave length of light—green, red and near-infra-red. Transmitted to earth, the three separate images can readily be combined into a single, detailed color picture, and ERTS can produce a total of 9,200 pictures a week.

ERTS's infra-red scanners can perform more subtle detective work, since every object, living or inanimate, emits or reflects the various wave lengths of infra-red light with a different intensity. Chlorophyll, for instance, a key chemical involved in the production of oxygen by green plants, has a very distinctive infra-red "fingerprint." Thus, by the color variations in photos, future ERTS satellites could quickly detect any large—and possibly dangerous—change in the chlorophyll content of ocean plankton, a principal source of the world's oxygen supply. By similar "fingerprinting," ERTS and its successors could warn of changes in the health of woodlands, detect harmful acidity in soil, find clues to new oil and mineral deposits, and perhaps even sniff out illegal fields of opium poppies.

Verdict on DDT

When DDT first appeared in the U.S. in 1942, it seemed almost like a miracle drug. Cheap and efficient, it destroyed pests, reduced such insect-borne diseases as malaria, and brought bumper harvests. But over the years scientists found disturbing evidence, first publicized in Rachel Carson's *Silent Spring*, that DDT was harmful to animals too, and might threaten man as well.

After 17 months of weighing the evidence pro and con, Environmental Protection Administrator William D. Ruckelshaus announced his verdict last week: "DDT is an uncontrollable, durable chemical that persists in the aquatic and terrestrial environments." Because it lasts so long, it can build up in fish and animals until it "may have a serious effect" on human beings.

With that, he imposed an almost total ban on the pesticide (exceptions: in cases of sudden epidemic, when DDT is the most effective means of combatting disease-carrying insects; shipment to countries where malaria is a problem; and use on onions, green peppers and sweet potatoes in certain areas that are particularly vulnerable to pests). The ban will not go into effect until the end of the year, allowing time to train farmers in using DDT's chief substitute, methyl parathion, which is highly toxic but breaks down soon after being used.

The ban was immediately challenged in suits filed by the manufacturer and processors of DDT. Another challenge came from the Environmental Defense Fund, which has been chiefly responsible for forcing the issue. It filed a court petition asking that the ban go into effect immediately and that it forbid all domestic applications of the one-time miracle.

A Cure for Elms

Each year more and more American elm trees, which once lined hundreds of town squares, fall victim to Dutch elm disease. Last year the apparently incurable blight destroyed at least half a million trees in the U.S. This summer the pestilence may be worse; it has spread from the East through the South and Midwest and is now attacking trees as far west as Denver.

After every other remedy failed (including such folksy "cures" as injecting trees with turpentine or whacking galvanized nails into their trunks), scientists believe they have found a way to stop the fungus that causes the disease and the elm-bark beetles that spread it. The new approach involves two steps: spraying dormant elms in early spring with a pesticide called methoxychlor, which is lethal to the beetle but harmless to most other insects, and then spraying again in June with a chemical called Benlate, which attacks only the fungus. Instead of spraying, the arborist may also inject Benlate directly into the tree trunk, which puts the fungicide into the elm's circulatory system. After testing the treatment on 600 elms in a Milwaukee suburb for two years, University of Wisconsin researchers report that the mortality rate for the trees has dropped from 5% per year to 2%.

Benlate itself is not completely new. For two years it has been used as a fungicide to protect roses and tomatoes. What is new—officially approved only this March by the U.S. Department of Agriculture—is its application to Dutch elm disease. The problem now is to persuade communities and private tree owners to undertake the effort and expense ($75 per tree per year) needed to make the treatment work. When John Hansel, executive director of the Elm Research Institute, took the cure to Denver last February, the mayor refused to see him. The city had its own method for treating the disease—simply cut down and burn infected trees. Says Hansel: "We've come a lot farther in dealing with the beetle than we have with the politicians."

STREET IN WAUKEGAN, ILL., BEFORE & AFTER ATTACK OF DUTCH ELM DISEASE