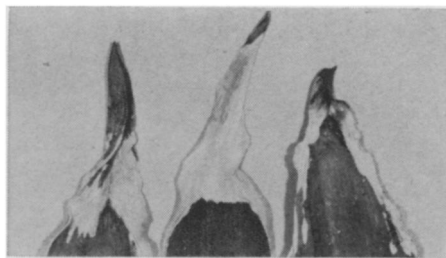
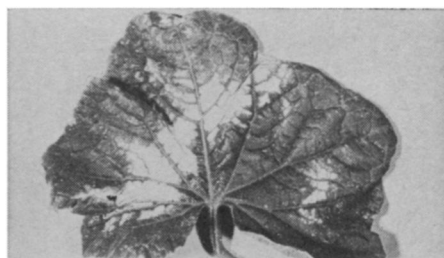




Salt Lake City Tribune



Rutgers University



Rutgers University

Smog, which almost obliterates Utah's Capitol, also killed the tips of the tulip leaves and maimed the cucumber leaf in N.J.

# Man and His Bruised Planet

Amid withering plants, eroding buildings, reeking streams and poisonous air, scientists search for ways to undo the damage man has done to earth.

When American science sat down to discuss "How Man Has Changed His Planet" few cheering notes were heard.

Masterful man has progressed to the point where he can befoul the air enough to kill the plants that sustain him, indeed enough to kill his brothers. Man has managed to dump enough pollution into his rivers that he cries out for clean water. Even the outer crust of his planet, the essential soil, has been contaminated.

If he erects monuments to his ideas and ideals, he spews out from his manufacturing plants chemicals that erode them. When he puts down competing species, such as insects, he, without thinking, kills species he would like to have live, such as fish.

The American Association for the Advancement of Science, in session last week, looked at man's effect on his environment in a series of symposia.

Even those participants who brought good news underlined the gravity of the problems man has fashioned for himself. James M. Quigley, Commissioner of the Federal Water Pollution Control Administration, reported the nation "on the verge of a massive water pollution control effort."

"Most point-source pollution—industrial and municipal wastes—can and will be brought under control in this country in the next 5 to 10 years," he declared. But many sources will remain, including pesticides, erosion, and salt increases in irrigation water.

"The blunt fact is," Quigley told

the scientists, "that the scientific genius that has characterized so much of America's industrial efforts has largely by-passed the field of pollution control. In 1966 we are building sewage treatment plants which, technically speaking, could have been built in 1936, or, perhaps, even in 1906."

Even problems once thought solved, at least by laymen, cropped up again to face the scientists. The detergent industry, which spent millions to take the foam out of its products, and thus off the surface of streams and lakes, is still a major contributor to pollution, the conference was told.

Dr. Paul Verduin, professor of botany at Southern Illinois University, placed the blame on the element phosphorus, a key agent in fomenting heavy growth of smelly green algae that blankets many bodies of water.

Dr. Verduin said that the major source of phosphorus in the nation's streams and lakes is the effluent from sewage treatment plants, rather than runoff from fertilized farmland. The bulk of the phosphorus comes from household detergents, he declared. "I am unable to understand why the detergent industry can't find a substitute for phosphorus in its product."

Such a substitute could reduce the amount of phosphorus reaching the streams by half, he said, although "there would still be too much for comfort." A possible solution to the problem, Dr. Verduin suggested, would be to build far more artificial lakes and

lagoons where phosphorus could be removed by harvesting the algae.

In one of the few hopeful reports in the pollution line, Dr. Louis T. Kardos, professor of soil technology at Pennsylvania State University described his work with effluent. For the last four years, he declared, effluent from a plant serving his school and the town of University Park, Pa., has been spread on crop land at the rate of two inches of water a week.

The growing crops, he reported, take up much of the phosphorus and nitrogen from the detergent-laden water. When the crops are harvested, these elements go with them, leaving little to promote algal growth.

In addition, he said, crop production was sharply increased without need for artificial fertilizers, underground reservoirs were recharged, and mineral-rich crops produced.

The water that trickles down into the underground reservoirs and then to streams and wells, is much freer of nutrients than the original effluent, the product dumped into rivers by many city treatment plants.

In the Penn State tests, a half-million gallons of waste water were used in this way every day. Dr. Kardos estimated that 1,290 acres—about four medium sized farms—could handle the waste water from a city of 100,000 persons. But the method probably would not be practical in a city the size of Washington, where the effluent would have to be spread over 322,500 acres.

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## . . . Bruised Planet

One worrisome element in the water pollution field was ruled out—for the present. Agricultural fertilizers are not to blame for contaminating water supplies, according to G. E. Smith, director of the University of Missouri Water Resources Research Center. But he suggested that the problem may well come up in the future if excessive amounts of fertilizer are used.

Dr. Smith's work focused on nitrates, which, in high concentrations, can be dangerous to babies. His study of 6,000 rural water supplies in Missouri "indicated that animal wastes, improperly constructed shallow wells, and septic tank drainage are the main sources" of water contamination in his state.

As the need for greater crop production increases in order to feed the expanding population, rates of fertilizer usage will also rise, and possible present danger. "But for the present," he said, "agricultural fertilizer is not a water contamination culprit."

But if the farmer's fertilizer is no problem, his bug sprays are. Three experts from the Interior Department's Division of Pollution Surveillance, Richard S. Green, Charles G. Gunner-son and James J. Lichtenberg, reported on a study of the presence of chlorinated hydrocarbon pesticides in American streams.

They found that such poisons, including dieldrin and endrin, "have been a small but ubiquitous part of our waters for nine years."

Endrin reached a maximum, particularly in the lower Mississippi in early 1964, the trio reported, and have declined since. "Major fish kills in the lower Mississippi, which had previously occurred during the late fall months, were not reported in 1964 and 1965."

If the waters are foul the air is no better. Bad air is rapidly replacing bad weather as the chief enemy of the farmer, a panel agreed. The air in parts of six states—New York, New Jersey, Florida, California, Oregon and Washington is so bad that the pollution does more harm to the farmer than wind, cold and ice put together.

From New Jersey came a report that the air is doing more harm than weather, pests or insects. "For a price we can do something about pests," said Rutgers University's Robert Daines. "But we have no control over air pollution, at any price."

Already farming is impossible in some localities. If nothing is done "it won't be many years before agriculture in certain parts of America ceases to exist," said Dr. O. C. Taylor of the University of California. "Around Los

Angeles a farmer can no longer grow vegetables."

In the last five years hundreds of spinach farmers in New Jersey have been put out of business by the air the plants breathe, and the lettuce, endive and chicory farmers are now in the same danger.

Reports from around the country said much the same thing. In Florida, crops are heavily damaged by fluorides flung into the atmosphere by phosphate plants. In Tennessee both crops and forests are killed by sulfur dioxide fumes from the smokestacks of the Tennessee Valley Authority's coal-burning power plants. In one 20-mile wide area 90 percent of Tennessee's white pine trees have been destroyed by bad air.

An ominous note was sounded by Dr. Daines, who pointed out that at one time spot sources of pollution were responsible for most of the trouble, and then only in their immediate vicinities. Now, even with most of these sources cleaned up to some extent, the pollution is more pervasive. In the face of these reports there was no one at the meeting who would echo, for air pollution, the somewhat hopeful remarks of Quigley about filthy water.

A new concept in the anti-pollution fight was introduced by Dr. Athelstan F. Spilhaus of the University of Minnesota. He suggested that industry, instead of concentrating on the products it produces, also consider what is left over or thrown out, and try to make use of that. This "closing of the loop" would cut pollution heavily. The traditional job of industry has been the supplying of things to contribute to the ease of our living, Dr. Spilhaus said. An environment loaded with the discards of ease causes "dis-ease"—sometimes in the physical sense, and more than likely contributes to mental disease.

As usual, the remedy proposed for the polluting effects of modern technology was more technology. Dr. Harris B. Stewart Jr., of the Institute of Oceanography of the Environmental Science Services Administration summed up the technologists view:

"American scientists are concerned with environmental pollution—very concerned. They are upset about what they find about them now and what they can predict for the future. They want to and must contribute a major increment to the solution of what has become the major environmental problem facing mankind.

"Man made the problem, and man can solve it."