

OIL POLLUTION

Damage at Santa Barbara

Damage to flora and fauna due to the Santa Barbara Channel well blowout in early 1969 was much less than predicted, according to Dr. Dale Straughan of the University of Southern California, Los Angeles. She adds that the area is recovering well.

Dr. Straughan headed a team that did extensive investigations of the oil spill. Their findings were recently published in a two-volume work. The team examined plankton, benthic populations, populations of intertidal areas, fisheries, birds and mammals.

“... There was very little mortality in the Santa Barbara Channel due to the direct toxic effect of the spilled oil,” the report says. It adds that the most toxic portions of the crude oil are volatile and evaporated soon, leaving a “relatively innocuous” residue.

Fatalities occurred in *Chthamalus fissus*, a barnacle, and in pelagic birds, mainly due to smothering by oil rather than its toxic effects, the report says.

The report acknowledges that because of long-term oil seepage in the channel, organisms may have adapted to oil and may have been less damaged by the spill than if they had not made this adaptation.

AIR POLLUTION

Utility to install SO₂ facility

A National Research Council report last year suggested that technologically and economically feasible means for removing sulfur oxides from flue gases of power plants and other industrial operations are several years away (SN: 3/29/70, p. 187).

Commonwealth Edison Co. of Chicago, however, has announced it will begin construction this spring of a \$7 million facility to remove particulates and SO₂ from the stack gases of its 176-megawatt Will County generating station. Using a wet scrubber and pulverized limestone slurry, the facility, Commonwealth claims, will remove 99 percent of the particulates and 80 percent of the SO₂, thus enabling the utility to meet Illinois emission standards.

RESOURCES

Food supply and population growth

A growing controversy among environmentalists concerns population and consumption (SN: 1/9/71, p. 21). One group claims the environmental crisis is generated mainly by population growth. The other says the key factor is not population but excessive per capita consumption, especially in the developed countries. But even those who blame consumption tend to agree that, given present trends, population growth will eventually exceed food supplies.

Dr. Colin Clark, former head of the Agricultural Research Institute at Oxford University, disputes this latter claim in an article in the February issue of the Catholic monthly TRIUMPH.

According to Dr. Clark, per capita agricultural production in many of the less-developed countries has increased during this century, measured in kilograms of wheat equivalents (a measure based on economic not

nutrient values). In addition, he says, the agricultural productivity per worker has increased substantially in the developed countries. Besides this, says Dr. Clark, there is much usable land that has not been cultivated, let alone the potential for food from the sea and other sources.

The primary error of Malthusians, claims Dr. Clark, is that they see increasing agricultural productivity as spurring increasing population, to an eventual point of exceeding food supply. Dr. Clark claims it works the other way: Food supply is increased in response to growing population.

LAND RECLAMATION

Spoil banks become fertile

Spoil banks, mounds of overburden from strip mining (SN: 1/30/71, p. 87), are difficult to reclaim even if they are leveled. Because the topsoil comes off first, it is buried. Nutrient-poor and acid soils are thus often on the surface, and they will not support plant life.

Dr. William Sopper, forest hydrologist at Pennsylvania State University, has made spoil-bank materials highly fertile by the addition of effluents and sludge from sewage treatment plants, says the February issue of Argonne Universities Association REPORTS.

Dr. Sopper got the idea from another Penn State experiment in which forest soils were used as a “living filter” to purify the sewage plant effluents. He reasoned that because soil removes nutrient materials from the effluent, the technique might also be useful for adding nutrients to soils.

The researcher brought acidic spoil-bank soil to the Penn State campus, where he placed it in 20-ton-capacity wooden boxes. Two of the ten planters received no treatment; the other eight were irrigated with the effluents and the sludge.

The preliminary results are dramatic, says Dr. Sopper. While nothing grew in the control planters, a variety of plant species with well-developed root systems took hold in the treated planters.

PESTICIDES

Organophosphate measurements possible

Organophosphate pesticides, although highly toxic, are being used in increasing amounts because they are far more biodegradable than chlorinated hydrocarbons such as DDT.

Dr. George Baum of Corning Glass Works, Corning, N.Y., has devised a biological activity test to determine the toxicity of residues of organophosphates or of intermediate compounds. Such a test makes possible precise scheduling of the application of the pesticides to crops because it is possible to determine when biodegradation of earlier applications has eliminated toxicity.

The pesticides act by blocking the enzyme acetylcholinesterase, important to the nervous system of both insects and mammals. Dr. Baum's test measures this activity through simple pH meter readings of an enzyme solution to which the organophosphate residues have been added. The rate of inhibition of the enzymes is measured by a stop watch. This rate is the index of the toxicity of the residue.