

# Earth and Environment Notes

## LIMNOLOGY

### Great Lakes Lampreys Losing

Construction of the Welland Canal and, more recently, the Saint Lawrence Seaway brought prosperity to many Great Lakes ports and devastation to the Lakes' ecology.

Foremost among the unwanted users of the canals that connect the Lakes with the Atlantic Ocean were sea lampreys—sucker eels that attach themselves to the sides of game fish and suck out their life juices.

The Great Lakes Fishery Commission this month reports heartening statistics. According to the numbers of lampreys counted at weirs on the streams where they spawn, chemical control of the pests has been around 97 percent effective.

According to the U. S. Bureau of Commercial Fisheries, which conducts the U. S. part of the war, only about 45 percent of the numbers of lampreys observed at the barriers in 1966 reappeared this year—at least up to June 2.

If that proportion holds constant for the entire year, the total lamprey count will be between 94 and 97 percent less than the average count for the five years before chemical warfare on the eels was begun.

## OCEANOGRAPHY

### Russians Explain Thresher Loss

Even though the ocean surface may appear calm, internal waves beneath it may be hundreds of meters high and perhaps thousands of meters long.

Such violent internal sea waves may have forced the American nuclear submarine Thresher below its crush depth, two Soviet authors speculate. Thresher went to the bottom with all hands on April 10, 1963. Its loss has stimulated the Navy to produce a deep submergence rescue submarine, now under construction.

Particularly strong internal waves are often found in the Strait of Gibraltar, the authors write, where they reach a height of 80 meters, a length of 1,000 meters and have a period of 10 minutes.

The Thresher theory was proposed by K. D. Sabinin and O. P. Galkin in an article in *ZEMLYA I VSELENNAYA*, number two, 1967.

## GEOLOGY

### Fluorescent Particles Tag Sediments

Mineral particles coated with fluorescent paint are being used by U. S. Geological Survey scientists to trace the movement of stream-bottom sediments.

One fluorescent grain can be detected when mixed with as many as 10 million ordinary sediment particles. This has made it easy to chart the flow of naturally occurring silt in an irrigation canal near Albuquerque, N. M.

About every 10 minutes for a week, painted grains of quartz, garnet, monazite and lead shot are dribbled into the canal. Samples are then collected from the canal bottom at downstream distances ranging up to several thousand feet from the dribble point.

Heavier particles such as the monazite and lead shot

were found to move no more than 10 feet a day. Lighter particles such as quartz and garnet drifted up to 300 feet a day.

By watching the fluorescent particles, which show up clearly under ultraviolet light, USGS scientists have learned how pollutant particles would move in a stream, says Vance C. Kennedy, project coordinator in the Survey's Denver office.

The first study of this type in U. S. streams was done two years ago in Clear Creek at Golden, Colo., by Kennedy and a colleague, D. L. Kouba.

## METEOROLOGY

### Forecasters Lack Weather Data

The main thing holding back weather forecasters from making accurate 10-day predictions is a lack of sufficient data on the current state of the atmosphere.

Prediction methods and computing techniques are capable of the 10-day predictions, but a vast network of weather buoys, satellites, balloons and ground stations must be set up to provide the basic information for the computers to work on.

Those are the main conclusions reached at a two-week conference in Stockholm of representatives from 13 nations who met to plan the Global Atmospheric Research Program.

The delegates recommended at least two large-scale atmospheric studies, a wide-scale attempt in 1973 to collect atmospheric data with emphasis on tropical areas and a more complete follow-up a few years later.

Thus, the scientists believe, seven to 10 day predictions might be achieved easily and, within 10 years, the range could be increased considerably as worldwide base data accumulates.

A final report of the conference will be published in August.

## WATER POLLUTION

### Swedes Try to Rejuvenate a Lake

Even if current efforts to stop pollution of American lakes and streams score eventual success, the effects of years of accumulation of human wastes will not wear off quickly.

One of the principal problems is that the layers of rich garbage now on the lake bottoms will continue to release nutrients into the water for many years, supporting noxious algae growths such as have already appeared over hundreds of square miles of Lake Erie.

A group of Swedish scientists from Lund University plan to try to pump 70 years worth of this nutrient-rich mud from the bottom of Lake Trummen near Växjö. They expect to sell the mud as fertilizer to recover some of the cost of collecting it.

The bed of Lake Trummen has risen 40 centimeters in the past 70 years, the Lund scientists note, while in 12,000 years before that it rose only 500 centimeters.

If their plan succeeds in clearing the waters of the lake, it might well be applied in the myriad American lakes still suffering from decades of use as garbage and sewage dumps.