

# earth and environment notes

## HYDROLOGY

### The sea invades Alaskan canal

An unexpectedly cold, high-salinity and low-oxygen intrusion of deep ocean water into the southern Lynn Canal, off Point Retreat, Alaska, has been discovered by scientists of the U.S. Bureau of Commercial Fisheries. Apparently the influx takes place every year, from about July to September.

The mechanism allowing intrusion of deep ocean water in the southeastern Alaskan fiords is not understood, but there are two possible theories, according to Harry R. Rietze, regional bureau director at Juneau.

One is that normal southeasterly winds may relax, easing the shoreward transfer of surface waters along the coast and allowing the upwelling of deep water into coastal inlets such as Lynn Canal. The other possibility is that water runoff from the land, which is greatest during July and August, strengthens estuarine circulation and seawater flow on the surface, and thereby permits greater intrusion of colder water from the ocean below.

## FISHERIES

### Computer studies salmon

A computer is being used by Salford University in Manchester, England, in a three-year study to find out why salmon migrate to freshwater rivers. Besides studying the salmon in general, the project aims at discovering what biological and other factors in individual rivers affect their salmon populations.

Batteries of electronic instruments have been installed near weirs in the Lune River in Lancashire, and the Kent and Leven Rivers are expected to be added in the future. The instruments record the river's flow rate and volume, temperature, level, turbidity, color, silt content, dissolved oxygen, conductivity and acidity; plus air temperature, wind speed and direction, humidity, barometric pressure and the amounts of light falling on the river at the different data points.

The researchers hope to find, among other things, what effects various urban or industrial uses of the water will have on the salmon runs. Influences at sea may also be analyzable. The Danes, for example, are netting large quantities of salmon off Greenland, and the computer may help evaluate the effect of this on the population returning to British rivers.

## MINING

### Prospecting by computer

A computer-simulated open-pit gold mine, producing 200 pounds of gold a day from 32,000 tons of ore, has been operated by the U.S. Bureau of Mines to help see where the expensive parts of such an operation lie under different operating conditions. The method apparently works.

The simulation readily revealed that the major cost elements of the mathematical mine, placed near Cripple Creek, Colo., were cyanidation to dissolve and extract the gold, the grinding of the ore, and flotation to concentrate the gold-bearing portion.

A report on the experiment, entitled "An Engineering

and Economic Study of Gold Mining Operation" is available for 40 cents from the Government Printing Office in Washington, D.C.

## AGRONOMY

### Spring tracked by alfalfa

Spring advances northward about 100 miles every 7 to 14 days, according to a research team from the University of Wisconsin Agricultural Experiment Station. They planted cuttings from a single alfalfa plant at 16 different locations to trace the season's course.

Individual plants might develop differently in response to local conditions, the scientists say, but by using cuttings from the same plant, each has the same genetic makeup, so that any differences in growth must be the result of environment.

The cuttings were planted at stations ranging from Gainesville, Fla., only about 400 miles north of the Tropic of Cancer, to Palmer, Alaska, barely 350 miles south of the Arctic Circle. The first flowers appeared on the Florida plant around April 1, but they did not appear at the northern end of the chain until July 23, amounting to a 114-day lag over the 2,100 miles between the two points.

The appearance of the first blooms is relatively unaffected by local conditions, report the researchers, led by Dale Smith, and the advance of spring appears to be steady and almost uniform.

## CONSERVATION

### Canadian marsh gets reprieve

A 1,300-acre marsh on the south shore of Lake St. Clair in Ontario, Canada, which was to have been drained and converted into farmland, will stay at least temporarily marshy, thanks to a two-year agreement signed with the owners by the Canadian Department of Indian Affairs and Northern Development. The area has been a prime source of waterfowl, as well as a gathering point for migrating birds and ecologists.

The agreement, with Bradley Farms Ltd. of Chatham, will be continued if two years of study indicates that the benefits of preserving the area are worth the cost.

## WATER POLLUTION

### Estuarine prediction service set up

The nation's first service to help predict how rapidly river-water pollutants will be washed out to sea has been launched by the Environmental Science Services Administration.

The one-year pilot program is being operated at the Penobscot River and Bay Estuary in Maine, but other Maine estuaries and some in other states may be added later. The Penobscot, heavily polluted from industries such as paper mills, was selected largely because Maine was the first state to show official interest in the program.

On the third and eighteenth of each month, the service will issue predictions on the rate at which potential pollutants are expected to pass through eight selected points along the estuary.

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