

# earth and environment notes

## HYDROTHERMICS

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### Violent Geysers Once Blasted Yellowstone

Hot water explosions more violent than any studied before in the area created huge craters in what is now Yellowstone National Park, geologists report.

At least seven explosions occurred some 12,000 years ago in the last stages of the Ice Age. The largest crater is more than 2,000 feet across and several hundred feet deep, report L. J. P. Muffler, D. E. White, A. H. Truesdell and R. O. Fournier of the U.S. Geological Survey, Menlo Park, Calif. The energy for the eruptions came from upflowing water heated by volcanic magma and earth pressures to more than 392 degrees F. Abrupt release of pressures, perhaps triggered by sudden drainage of lakes as glaciers retreated, caused the water to flash explosively into steam.

## SOIL SCIENCE

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### Sandy Layer Conserves Water

A layer of sand or gravel spread over unused land can channel more rainfall into the reservoir of ground water, an important source of the world's water supply.

A layer of gravel will catch precipitation, keep most of it from evaporating, and speed it down to the water table, reports Dr. William D. Kemper, soil scientist of the Agricultural Research Service at Colorado State University, Fort Collins. This could reverse the trend of loss in the water table. Farmers are now pumping more water out of the soil for irrigation in many areas than is being put in by rain or melting snow.

## HYDROLOGY

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### Evaporation Pan for Streams

By using an instrumented float some ten feet wide, scientists hope to gain accurate measurements on how much water a flowing river or stream loses by evaporation.

Evaporation is an important factor in keeping a stream cool, points out Dr. John Seaders at Oregon State University, whose project has received a new \$16,520 grant from the U.S. Department of Interior. The coolness of a stream determines its quality, as well as the health of fish and other aquatic wildlife.

The instrumented pan, to be tried first in either the Willamette River or the Santiam River, will record river flow, temperature, wind velocity and direction, and rate of evaporation. Evaporation of water has been measured on lakes and still water areas before, but little is known about evaporation on flowing streams.

## OCEANOGRAPHY

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### Trans-Atlantic Winds Blow Minerals

The trade winds that helped blow explorers across the Atlantic from Europe to the New World have now been found to blow mineral dust and microscopic plants from Europe and Africa as far as the Caribbean Sea.

An assortment of minerals, plant materials and tiny fresh-water plants called diatoms, all similar to dustfalls east of the Atlantic, have been recovered from air and

surface water samples on a track between the Canary Islands and the Lesser Antilles edging the Caribbean, D. W. Folger and B. C. Heezen of the Lamont Geological Observatory, Palisades, N.Y., told the Geological Society of America meeting.

## ANTARCTICA

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### Heat of Ice Cap Scanned

For the first time in its frozen life, icy Antarctica is being closely surveyed with infrared scanning devices—a system that takes pictures with heat waves, instead of visible light waves.

With infrared instruments aboard a Navy plane, University of Michigan researchers will survey relative surface temperatures over Ross Island and Victoria Land. Warmer areas appear a light gray, colder areas almost black.

Scientists will be able to determine heat activity beneath the ice, such as volcanic or abnormal thermal action, invisible to human eyes or conventional photography.

## LANDSLIDES

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### Mining Wastes Found Threatening

Of 60 waste banks heaped up beside coal mine in Virginia, West Virginia and Kentucky, 38 show signs of instability, it was reported to the 80th annual meeting of the Geological Society of America in New Orleans.

In the last 40 years in these three states, there have been nine waste bank slides, killing at least 25 people, according to William E. Davies of the U.S. Geological Survey.

The waste banks have been studied since the disaster at Aberfan, Wales, in October 1966, when a pile of coal waste suddenly slid into the village and killed 144 people, 116 of whom were children.

Mining waste banks can fail from a variety of reasons, including slippage along steep slopes within the bank, heavy rainfalls and explosion of burning banks. Of an estimated 1,500 banks in the three states, 600 are on fire or have been burned, converting the waste to red dog, a weakly fused mass of angular blocks and coarse ash.

U.S. coal waste, consisting primarily of broken pieces of coal, shale and sandstone, is usually dumped in long ridges, as much as 800 feet high and a mile long.

## WEATHER

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### The Chilling Side of Snow

A sobering voice as the holiday season approaches is that of the Environmental Science Service Administration, which points out that more than 3,000 people have died from snow-related accidents in the U.S. in the last 30 years.

One third of the fatalities have been due to automobile and other accidents. About 800 were caused by heart attacks resulting from overexertion. Exposure took 350 lives. The rest have been due to causes such as home fires, carbon monoxide in stalled cars, falls and electrocution from downed wires.