

Roll on, mantle, roll on

The mystery of the earth's apparently wandering mantle plumes, or hotspots, which have left trails of volcanic activity across the surface of the planet, has led two former Princeton geophysicists to suggest that earth may resemble a nest of spheres, with the mantle rolling around inside on an axis different from that of the crust above it.

Geophysicists have differed as to whether the many plumes around the earth are fixed relative to each other. In 1972 Robert A. Duncan, Robert B. Hargraves and Nikolai Petersen of Princeton said that the plumes could be that way if certain data discrepancies were accounted for by wandering of earth's magnetic pole over the last 50 million years. This year, however, it was determined that polar wandering in that period has been almost negligible.

As an alternative, Duncan and Hargraves theorize in the Oct. 19 NATURE that the plumes would still have their fixed relative positions if the mantle of which they are a part were rolling on an axis radically different from that of the crust. Studying the traces of eight plumes, including an extremely mobile one beneath Iceland, they conclude that such an axis would run from northern Sudan (25 degrees N., 30 degrees E.) through to just south of Tahiti (25 degrees S., 150 degrees W.), and that the mantle would have rolled around it about 12 degrees in 50 million years. The idea, they admit, is "curious."

Pop goes the basalt

The deck of the RV Jean Charcot was strewn with rocks, many of them black, shiny fragments of basaltic glass, just dredged up from the floor of the Mid-Atlantic Rift some 8,160 feet below, south of the Azores. Suddenly, with no warning, one of the fragments exploded, making a noise like loud popcorn and leaping perhaps a yard into the air. Then another rock popped, followed by more and more. The uncanny spectacle continued for three days.

The incident, which took place in 1972, was only the third such case ever reported, according to R. Hekinian of the Centre Oceanologique de Bretagne and Marcel Chaigneau and Jean Louis Cheminee of the Centre National de la Recherche Scientifique in Paris. (The first occurred above the continental shelf west of Baja California, the second over the Mid-Atlantic Ridge but north of the latest site.)

Apparently, the scientists suggest in the Oct. 19 NATURE, the fragments came from a volcanic outpouring that was so recent—the rift is one of the places where the earth's crustal plates are constantly being replenished—"that the lava flow had not yet had time to come to equilibrium with the pressure and temperature conditions of the rift floor." The rocks popped from the reduced pressure when they were brought up to sea level by the dredge.

Thin ice at the world's end

Earth's south polar ice cap may be just an anachronism, a holdover from an earlier, colder time, rather than a well-adjusted part of today's climate, says Ian Whillans of Ohio State University's Institute of Polar Studies.

This is certainly not the only possibility, Whillans reports in the Nov. 2 SCIENCE, but a 160-kilometer study trip across Antarctica near Byrd Station has shown that the ice sheet seems to be flowing out to sea and melting at least 15 percent faster than inland snowfall can replenish it. The ice may simply be out of tune with a warming climate, he says, or increasing volcanism and other factors may be to blame.

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Florida mangroves endangered

In language uncommonly foreboding for that journal, an article in Oct. 12 SCIENCE warns that "an ecocatastrophe of serious magnitude to the seaward fringe of the Everglades National Park and adjacent areas appears to be in the making." Covered by the most extensive mangrove stand in North America, the area is being slowly devastated by a wood boring isopod, *Sphaeroma terebrans*. Sometimes called "wood lice" and mistaken for tiny insects, which they somewhat resemble, *Sphaeroma* are in fact crustaceans, related to shrimp more than to true bugs.

The tiny animals have, for years, been gnawing away at the graceful, intricately spread prop roots that support the massive mangrove trees. But the current study, reported by Andrew Rehm and Harold J. Humm of the University of South Florida, shows the infestation has reached alarming proportions.

Mangrove trees play a vital role in protecting shore lands from the ravages of the sea, and with their prop roots hollowed out, trees along the water's edge first become undercut by waves and finally topple into the sea during a storm. The resulting erosion of soil where the tree once stood is causing a steady shrinking of shorelines. The authors estimate that the infestation extends from the Everglades along the Florida Gulf coast to near Tarpon Springs.

Wood for a long, cold winter

Amidst predictions of extensive fuel shortages and "a good season for the wood industry," the coming winter this year may see the resurgence of an old American tradition—sitting around a wood-burning stove on a cold evening.

One Oregon firm reports sales of old-fashioned stoves up 700 percent over last year and an Alabama company has received more orders than it believes it can possibly fill.

Nostalgia and problems of clear-cutting forests left aside, maybe the resurgence of old stoves isn't such a bad idea. To estimate the environmental impact, SCIENCE NEWS checked with EPA and local wood and oil distributors and came up with the following comparisons between heating with wood or fuel oil: A thousand gallons of fuel oil and one ton (about a cord) of wood each give off approximately the same amount of heat—140,000 BTU. But the oil gives off 284 pounds of sulfur oxides, 5 pounds of carbon monoxide and 10 pounds of particulates. The wood gives off more particulates, 25-30 pounds, but less of every other kind of pollution than oil, including only 2 pounds of carbon monoxide and negligible sulfur oxides.

Suds along the Willamette

"Nothing like drinking someone else's bathwater," commented a writer for the American Chemical Society, whose journal ENVIRONMENTAL SCIENCE AND TECHNOLOGY has just published a report showing what may be some of the consequences of trusting the folks upstream.

The study, conducted by Donald R. Buhler, M. E. Rasmussen and H. S. Nakaue of Oregon State University, found "significant" amounts of two toxic substances in the Willamette River, from which three Oregon cities draw their water. The substances are pentachlorophenol, a chemical widely used in the state's extensive lumber industry, and hexachlorophene, a germicide added to soap. The level of hexachlorophene, the researchers found, varied rather predictably with the hours when people ordinarily bathe.

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