

SEISMOLOGY

No Quakes at South Pole

Antarctica is the only continent in the world that has no earthquakes, shocks or tremors, but scientists still do not know why, William E. Small reports.

► TREMBLE from fear of earthquakes? Pack your bags and head for the South Pole.

Antarctica is the only continent in the world which has no seismic activity, no earthquakes, shocks or tremors. In fact, the southern one-fourth of the entire earth's surface has only 10% of the activity recorded for the world, SCIENCE SERVICE learned from Dr. H. C. Talley, seismologist at the U.S. Coast and Geodetic Survey laboratories in Washington, D. C.

Some of the best earthquake observation stations in the world are spread across the great icy continent surrounding the South Pole, Dr. Talley said. They have been there for seven or eight years.

No earthquake epicenters have ever been located on this vast land mass, even though geologists have been watching closely for them.

The mystery of the missing jolts has troubled many of the scientists working on seismic instruments there. Even the best seismologists hesitate to guess why Antarctica is the only tremor-free continent.

Several shocks have been recorded in a belt lying at 50 degrees south latitude in the waters circling the South Pole. Most of these have occurred in the Sandwich Islands near the tip of South America and the Macquarie Islands south of Australia. These two areas lie just opposite each other across the frozen continent.

Australia, which has the least number of quakes of the other six continents, records only three or four shocks each year, Dr. Talley said. Other areas record much higher numbers. The Aleutian Islands off the Alaska Peninsula, for example, have nearly one each week.

There are 11 sensitive seismic stations on or near the Antarctic continent, Dr. Talley said. The U.S. has two on the continent, one situated exactly at the South Pole itself. New Zealand also has two stations on the land and the Russians have an observatory at Mirny.

Stations built by Argentina, Australia, France and England also ring the cold continent on the islands as far away from the pole as 2,000 miles. None of the stations has so far located a quake center on Antarctica.

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SEISMOLOGY

Big Quake Expected; Earth Reels in Shock

► A BIG EARTHQUAKE is expected to happen somewhere in the world soon. Long overdue, it may come while the world rebounds from the mighty quakes that rocked the world in July.

Severe earthquakes have already struck

Panama, New Guinea, Alaska and Colombia in rapid fashion. The Colombia 'quake killed at least 15 persons and injured hundreds.

Nine large earthquakes reaching seven on the magnitude scale were recorded in the last two weeks of July on moderately sensitive instruments in Washington, D. C., seismologists of the U.S. Coast and Geodetic Survey told SCIENCE SERVICE. A reading of six or higher is considered a very big earthquake.

A 'quake of magnitude eight or over has been expected for the last few months. With the increased earthquake activity, scientists are watching the seismographs closely.

The last eight-magnitude earthquake struck Chile May 22, 1960. Tidal waves coupled with the earthquake caused nearly 2,000 deaths. Theoretically, such high magnitude earthquakes occur every one and a half years.

The scientists were unwilling to predict where the next tremor would take place.

The recent flurry of earthquakes is unrelated. They all have occurred in the so-called "ring of fire," the belt which girds the Pacific Ocean and stretches around the bulging equator. Their occurrence appears to be just "a matter of chance," according to the Survey seismologists. The usual number of large earthquakes is expected in the world during the year.

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PHYSICS

Whole New Family of "Lasers" Now Possible

► A WHOLE new family of optical masers, or "lasers"—amazing devices that hold promise for future communications between planets—are now possible, Bell Telephone Laboratories scientists reported in New York.

They demonstrated two optical masers using mixtures of oxygen with neon or argon to generate an infrared beam. Also demonstrated were five new gaseous optical masers, each using a different pure noble gas as the active medium.

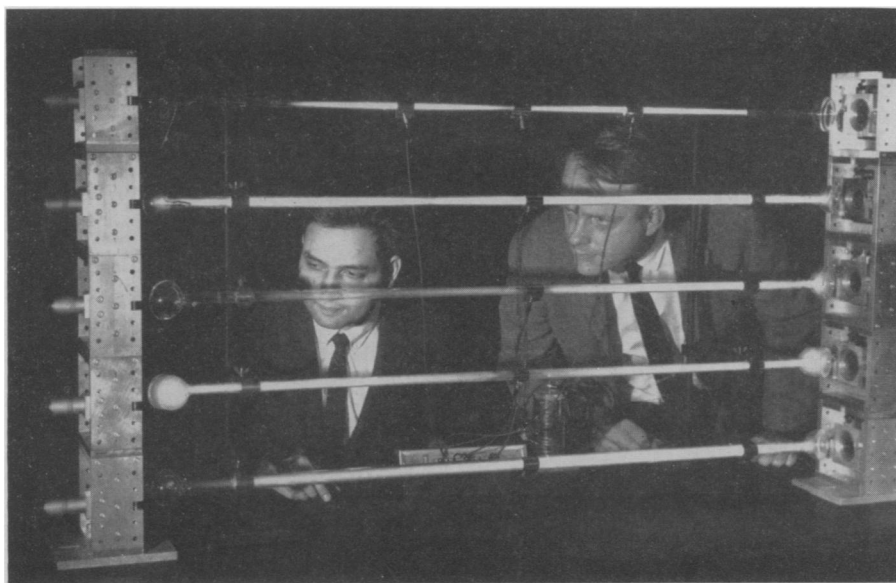
Optical masers concentrate light several million more times than a flashlight. All the light is of the same wavelength, or coherent, not a mixture as ordinary light is.

The five new masers use helium, neon, argon, krypton and xenon to send out continuous beams of coherent radiation at a total of 14 different infrared frequencies. This wide range of frequencies was previously thought available only from masers using rubies or some other solid.

The noble gas lasers were developed by C. Kumar N. Patel, William R. Bennett Jr., Walter L. Faust and Ross A. McFarlane, who also developed the oxygen-using optical masers.

In another demonstration, Alan D. White and J. Dane Rigden used a helium-neon device that emits a bright red, visible beam. This showed, for the first time, that when coherent light is reflected, it "sparkles."

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FIVE OPTICAL MASERS—Bell Laboratories' C. Kumar N. Patel and William R. Bennett Jr. check the alignment of optical maser tubes containing the five noble gases, helium, neon, argon, krypton and xenon. The new masers generate 14 coherent infrared wavelengths. The experiments led to the observation of three maser transitions never seen before.