

# Rain May Come to Desert

A desert area in India that has been dry for centuries may be revitalized if dust can be removed from its air—By Barbara Tufty

► AIRBORNE SCIENTISTS with dust-probing instruments may eventually bring rain and fertility to an arid desert that has been dry for centuries.

On a four-day flight pattern over the dust-laden Rajasthan desert area of northwest India, scientists recorded the density of stagnant dust clouds and gathered samples for later analysis, reported Dr. Reid A. Bryson, University of Wisconsin meteorologist and leader of a scientific and technical team to New Delhi.

They hope to explain where the dust comes from, why it remains suspended over the half-million-square-mile desert area, and how it could be removed by proper control of the land beneath it, Dr. Bryson said.

The dust-analyzing instrument recorded dust densities over Lebanon, Iraq, Iran, Pakistan and Thailand to the South China Sea. The major part of the analysis, however was made over the northwest India desert, which may be expanding at the rate of one-half mile each year.

For four days a Navy P-3A Lockheed Orion patrol aircraft flew in repeated patterns at intervals of 2,000-foot levels up to 30,000 feet. The dust sometimes extends up to 35,000 feet.

The great amount of dust in the air reflects solar radiation and prevents it from reaching earth. Thus the area is cooler than usual, and the air tends to sink into a stable state.

If the dust could be removed from this huge air mass, a series of interesting reactions might take place, Dr. Bryson reported. With more sunlight penetrating the area, it would heat up, and the rising air mass could pull in much-needed moisture-laden air.

Results of the flight will give valuable information on this subject.

The Rajasthan area was not always desert. Archaeological evidence indicates that the desert was once fertile and heavily populated by the Harappans, ancient people who practiced agriculture and kept domestic animals. These people may have depleted the protective cover of vegetation over a sufficient area to permit the winds to pick

up enough dust to trigger the desert condition.

Through atmospheric mechanics and feedback cycles, the dust acts to maintain the aridity of the area. By packing down or coating the surface dust on the earth, the dust cycle might be changed to allow the life-giving monsoons to sweep the area.

The flight was sponsored by the Office of Naval Research, the National Science Foundation and the U.S. Weather Bureau.

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## OCEANOGRAPHY

### Ocean Secrets Probed By Fast-Paced Computer

► THE MIGHTY OCEANS will be giving up their deep dark secrets at a lightning pace involving 100,000 calculations per second on a new modern ship, the Oceanographer.

The ocean temperatures, sediments on the floor, the speed of currents and other facts will be compiled and stored by a Westinghouse Prodac 510 computer aboard the 303-foot, 3,800-ton ship.

The seven-million-dollar Oceanographer was built by the Aerojet-General Corporation and recently turned over to the U.S. Coast and Geodetic Survey, part of ESSA (Environmental Science Services Administration).

Designed to stay at sea for 150 days at a time, the ship has over 4,000 square feet of laboratory space. The ship will be making deep sea probes in the Atlantic Ocean around Jacksonville, Fla., for a year before proceeding to its permanent base at Seattle.

The heart of the automated controls is the computer with a 16,384-function memory core, which will continuously sort, analyze and store great amounts of geophysical, oceanographic, hydrographic and meteorological data as the cruises are underway.

In the past, ocean researchers had to spend months of painstaking effort doing this work.

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## GEOLOGY

### Boiling Mud Flows From Volcano's Lake

► A CRATER LAKE near the summit of the erupting Javanese volcano, Mt. Kelud, is the cause of devastating boiling hot mud flows which buried nine villages in April and killed at least 39 people and innumerable livestock.

Mt. Kelud, on the eastern part of Java, is one of the most dangerous mud-flowing volcanoes in the world, said Dr. Robert L. Smith of the U.S. Geological Survey of Washington, D.C.

When the volcano becomes active and starts to erupt, the 38 million cubic meters of water in the crater lake become boiling hot and spill over the edges. This mixes with volcanic ash and debris and washes down the mountain slopes at speeds as high as 60 miles an hour, engulfing everything in its path, burying villages and suffocating life.

During a violent eruption of Mt. Kelud in 1919, more than 5,000 people were killed and 104 villages completely or partially damaged, said Dr. Smith. Dutch scientists in the area attempted to alleviate future destruction by siphoning off the crater lake waters through pipes and tunnels, thus keeping the water at relatively low levels. When Mt. Kelud erupted again in 1951, the siphoning technique, which had been installed in 1926, seemed very effective. Only seven people were killed, all of whom were near an observation tunnel at the top of the volcano.

At present, the status of this siphoning technique is not known, said Dr. Smith, nor the volume of water in the crater before the eruption.

Mt. Kelud is located on one of the world's more densely populated areas and most turbulent volcano-ridden areas. This area, stretching across Indonesia, is part of the world's major volcano belt, the Ring of Fire that encircles the Pacific Ocean.

One of the world's worst volcanic eruptions took place in this area, not far from Mt. Kelud. The 1883 eruption of Krakatau on an island between Sumatra and Java created such huge waves that 35,000 people in coastal villages were killed.

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