

GEOPHYSICS

Lava, Smoke and Ash Spew From Mt. Redoubt

► FOR THE FIRST TIME in 33 years, the volcanic mountain Redoubt, about 115 miles southwest of Anchorage, Alaska, has erupted.

Lava was reported flowing from a new crater with smoke and ash being thrown 20,000 to 30,000 feet high into the air in billowing clouds.

The 10,197-foot volcano is part of the ever-active Aleutian arc that stretches 1,500 miles from Mt. Spurr through a chain of volcanic islands in the Pacific Ocean to Buldir Island to the west. This arc contains at least 76 major volcanoes, 36 of which are active, said Dr. Robert L. Smith of the U.S. Geological Survey, Department of Interior.

First sign of the new activity of the long-sleeping volcano was in the form of smoke, observed by an airline pilot on Jan. 24. He reported high-blown smoke and ash, and lava flowing from a new crater on the west flank of the mountain, some 3,000 feet below the summit. Heat from the eruption was melting glacier ice. The volcanic activity appeared to be increasing and ashes were falling over 30 square miles of the relatively deserted area.

Mt. Redoubt was last reported active in May 1933. Previous activities took place in 1778, 1819 and 1902.

There is always some kind of activity along the Aleutian arc. Volcanoes puff gently with thin streams of smoke or steam, or erupt violently with high clouds and rivers of lava, and earthquakes of various size shake and move the earth. The devastating earthquake of Good Friday, 1964, took place in this general active area. One of the most active volcanoes in the arc is Mt. Trident.

The Aleutian arc is part of the fiery belt of volcanoes called the Ring of Fire which stretches down through Japan, into Indonesia and Java and up the western coasts of South and North America. Some of the world's most violent volcanoes have erupted on this ring.

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MEDICINE

German Health Secretary Supports Medicare

► U.S. PHYSICIANS need have no fear of Medicare, Dr. Elisabeth Schwarzhaupt, the only woman cabinet member in West Germany, told SCIENCE SERVICE.

Germany was one of the first countries in the world to make it mandatory that money be set aside by workers and by the government that would insure health care for all the people. In the days of Bismarck, first Chancellor of Germany, social security went into effect in the 1880s, after the country had been unified.

Asked what she considered the principal difference between the West German and East German systems of health care, Dr. Schwarzhaupt, who is Secretary of Health of the Federal Republic of Germany, said

she believed it was in the state of "freedom" with which drugs are administered and how physicians are paid.

"In West Germany our interns get approximately \$250 a month. But in East Germany, payment is less and the problem of drugs is serious. East German doctors are not permitted to write us about their problems, but messages get through that certain drugs are desperately needed. The mass production and prescription system does not allow for testing and treating with the newest discoveries of scientists."

As for West Germany's problems of venereal disease, infant mortality and other public health problems, the health secretary said conditions had greatly improved since the malnutrition days following the war.

Care of pregnant women is of particular concern. A Mothers' Registration Card, soon to be introduced throughout the Federal Republic, will contain blood type, rhesus factor and any complications in earlier births. Such cards have already been issued in certain cities, mostly in the Ruhr District.

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TECHNOLOGY

Electronic Machine Analyzes World's Music

► ELECTRONIC EQUIPMENT is being used at the University of California at Los Angeles, to study and analyze some of the world's oldest music, and to assist researchers in charting the musical cultures of the world.

A music-transcribing machine, the Seeger Melograph, is used by its developer Charles Seeger and his colleagues to conduct cross-cultural investigations of singing styles.

Recordings of song passages and lines of melody are played through electronic devices that measure amplitude, pitch and tempo. The Melograph transcribes these on graph paper. These visual representations are produced with such sensitivity that researchers can literally see vocal characteristics and effects that only the finest musical ear is capable of hearing.

Valuable information about the musical traditions of different cultures is being obtained with the Melograph, particularly from comparisons of graphs of a single line of melody as sung by singers from different countries.

UCLA's institute of ethnomusicology cooperates with several of UCLA's centers for the study of geographic areas.

Graphs of a vocal characteristic such as vibrato show that Japanese singers use a wide vibrato, Sudanese a narrower vibrato and Thai singers nearly none at all.

The Melograph is designed to produce a more accurate and useful picture of singing style than is possible to obtain from a transcription using conventional music notation.

Compared to conventional music notation, the Melograph gives researchers an accurate picture of "what happens between the notes."

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IN SCIENCE

MEDICINE

Rib Joint Abnormality Causes Wrong Diagnosis

► AN UNEXPLAINED PAIN in the back or abdomen can be traced to the ribs.

The rib joint sometimes becomes abnormally connected to the spinal column, causing pain that can be mistakenly diagnosed as anything from gall bladder trouble to appendicitis.

Duodenal ulcer, kidney ailment and even coronary blood insufficiency are among the wrong diagnoses for pain sometimes brought on after a sudden mechanical injury, such as falling on the back or bumping the rib cage, Dr. Frank L. Raney Jr. of San Francisco, Calif., told the American Academy of Orthopaedic Surgeons meeting in Chicago.

Fifteen of 41 patients who had inflammation of a nerve root caused by rib-joint pain underwent successful surgery, and said they could participate in sports, had no symptoms and took no medication. Fourteen more patients who had operations, said their surgical results were good, and five others said they noted some improvement.

A total of 194 of his patients had rib-joint abnormalities, Dr. Raney said, and some of them had been spending large amounts of money for the wrong treatment, causing them to become extremely frustrated and depressed. Some had been told by their physicians that their problem was predominantly emotional or psychosomatic.

The pain is usually confined to one side of the body, but often spreads around the side so that patients cannot tolerate tight clothing, coughing or turning in bed. They also complain of pain when they sit for a long time, ride over a rough road in an automobile, or lift a child repeatedly.

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OCEANOGRAPHY

Swedes, Danes to Chart Mysterious Sargasso Sea

► THE MYSTERIOUS Sargasso Sea, home of a floating mass of seaweed that for centuries has been a feared legend among seafarers, is about to be investigated by today's scientific Norsemen.

A joint expedition of Swedish and Danish scientists left for the Sea, aboard the Danish research vessel Dana.

The Danes will be checking a belief that Scandinavian eels hatch their eggs among the tangled strands of weed.

The optics of the Sea, which are affected by millions of brown algae, or *Sargassum*, will be investigated by the Swedish team, under the direction of Prof. Nils Jerlov of the Oceanographic Institute in Gothenburg, Sweden.

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E FIELDS

BIOTECHNOLOGY

Photocell Placed in Nose Monitors Human Pulse

► SURGEONS CAN NOW take a pulse in the nose during operations where no other technique will work.

The new instrument, using a photoelectric cell for monitoring the pulse, is placed in the nose. Normal monitoring sites are the outer ear, or the finger or toe pads, but the new method shows subtle conditions that alter cerebral blood flow.

The sensitive device is especially valuable in monitoring the pulse of a patient placed under low temperature, or hypothermia.

In the case of two such patients, their temperatures drifted down to about 86 degrees F., and only the nose monitor, called the Groveman Rhino-transducer, yielded a pulse. The transducer gets its signals mainly from the internal carotid artery.

Dr. Joseph Groveman, anesthesiologist at Los Angeles General Hospital, developed the device in collaboration with Corbin-Farnsworth, Inc., Palo Alto, Calif., a Smith, Kline & French Laboratories subsidiary.

Details of Dr. Groveman's procedure is being reported in the journal *Anesthesiology and Analgesia Current Researches*, Jan.-Feb. 1966.

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MEDICINE

Experimental Cholera Produced in Man

► EXPERIMENTAL CHOLERA has been produced in at least one healthy volunteer in Bangkok, Thailand.

Dr. Chanyo Benyajati of the Chulalongkorn Hospital Medical School, Bangkok, produced the disease in a human, using the same material that caused experimental cholera in rabbits.

The doctor's work was supported by an international fellowship from Lederle Laboratories, a pharmaceutical manufacturer in Pearl River, N.Y.

Although cholera is more treatable and preventable today than in past years, it was formerly responsible for hundreds of thousands of deaths, and is still a danger, inasmuch as cholera vaccine does not work 100%. All U.S. soldiers who go to Viet Nam are vaccinated against cholera.

As late as 1964, a U.S. Navy medical team was invited to move into Saigon to stop the spread of an epidemic that threatened Viet Nam. Some 750,000 residents of the South Viet Nam capital city were given cholera shots, and those already affected got treatment to restore fluid and electrolyte balance.

In the Chulalongkorn Hospital Medical School in Bangkok, reported Dr. Chanyo in the *British Medical Journal*, Jan. 15,

1966, during the severe cholera epidemic of 1959, only five deaths occurred in a total of 134 confirmed cholera cases. The deaths were associated with kidney failure. Treatment cured the other cases.

The first case of cholera in the United States in 54 years was contracted last summer by a laboratory technician at Walter Reed Army Medical Center, Washington.

The volunteer who developed cholera was carefully watched by doctors to prevent any danger of death, and because he had been given a "sterile" filtrate of a culture of *Vibrio cholerae* he suffered diarrhea only 48 hours.

A minimum of risk is foreseen if further human study is done with volunteers under controlled conditions. One possibility is suggested in a letter from Dr. R. A. Finklestein, of Walter Reed, to Dr. Chanyo. That is the question of whether a "sterile" food-borne choleraic disease may exist in nature as a result of a preformed cholera-causing material in infected foodstuffs or water that have been disinfected by conditions harmful to the cholera germ.

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PARASITOLOGY

Snails Get Antibiotic To Suppress Disease

► SCHISTOSOMIASIS, which affects up to 250 million people in the Middle East and other parts of the world, can be treated in the snails that carry the disease.

By using low concentrations of the drug chloramphenicol, two scientists at Western Reserve University of Medicine, Cleveland, Ohio, suppressed the development of *Schistosoma mansoni*, a species of flukes, or parasitic trematode worms, without killing the snails.

Drs. Kenneth S. Warren and Austin S. Weisberger, who reported the research in *Nature*, 209:422, 1966, said the drug inhibited protein synthesis during a period of marked growth of the parasite, thus preventing its development. They believe other drugs could be more effective than chloramphenicol in interrupting the life cycle of *S. mansoni*.

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PUBLIC SAFETY

Dashboard Light Warns Tailgaters to Slow Down

► "TAILGATERS," drivers who follow too closely behind other cars, may be confronted in the future with a dashboard gadget that checks their speed, then signals a warning if they are not leaving enough space ahead.

Researchers at Ohio State University, Columbus, connected a wire between two test cars as a sensor to indicate the cars' relative speed and spacing. Such a device—replaced by radar or light beams in production automobiles—could reduce drivers' variations in "headway spacing" by as much as 70%, a Highway Research Board meeting was told.

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BIOCHEMISTRY

Spark of Life Hinges On Complex Iron Pigment

► A COMPLEX IRON pigment called ferroheme has been found to carry energy-producing oxygen through the body.

Two Pennsylvania State University chemists told the American Chemical Society meeting in Phoenix, Ariz., of experiments that showed remarkable features of electrical energy transfer by ferroheme.

In blood, this complex pigment ferroheme is locked into hemoglobin, a huge, spiraled protein molecule found in red corpuscles. When a person breathes, oxygen is taken up through the lung tissue by the blood, primarily by the red corpuscles. The oxygen is then carried through the bloodstream to other parts of the body where it oxidizes food and stored fats to give energy.

Last year Dr. Joseph Jordan, Pennsylvania State professor of chemistry, and a graduate student, Theodore M. Bednarski, reported discovering how the red pigment molecules, ferroheme, accept energy in the form of electrons by essentially locking oxygen into a hemoglobin molecule. They said that two separate molecules of a heme, called monomers, give up two electrons and join into a single molecule called a heme dimer.

The chemists also announced a second discovery about heme. They found that a simpler and more feasible oxidation of heme takes place if the acidity is controlled.

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ENGINEERING

Foreign Ships Built Like Trailer Truck

► THE IDEA of having engines and trailers in separate sections was first used in trucks. A British aircraft designer, Freddy Miles, applied this idea to aircraft nearly 20 years ago; a cockpit and the front wings, and then a detachable container, and finally the all-essential tail unit.

Now the British Government's National Research Development Corporation is sponsoring a project to apply the same thought to freight ships.

The vessel is built so that the aft section, containing the propulsion, navigation and accommodation units, can be rapidly disconnected from the cargo sections, while freshly-loaded hull sections can be linked in for movement to the next port.

In a modern cargo vessel, the propulsion machinery, accommodation and control equipment are concentrated in the aft portion of the ship and account for approximately two-thirds of the total cost of the vessel. Because a cargo ship can be expected to spend at least half of its life in port, the most costly part of it, the aft section, is never used to full advantage.

Used on a shuttle service, the "Multi-packet" vessel, built by Hay & Smart, Ltd., Liverpool, can be operated so that one propulsive unit works in conjunction with three cargo units, one of which is at each end of the shipping run.

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