

SEISMOLOGY

Disturbance in Magnetic Field Before Quake

➤ A DISTURBANCE in the earth's magnetic field occurred one hour and six minutes before the destructive Alaskan earthquake last March 27.

This recorded increase could be related to the temblor, George W. Moore of the U.S. Geological Survey, Menlo Park, Calif., suggested in *Nature*, 203:508, 1964.

He said the magnetic event preceding the Alaskan earthquake could have resulted from changes in the structure of rocks due to a build-up of stress. If future observations show magnetic effects occur before other earthquakes, this would lead to a way to predict temblors before they strike, in time to save lives and property.

The Japanese have been investigating the possible correlation between magnetic and seismic effects for many years without success.

• *Science News Letter*, 86:104 Aug. 15, 1964

PHOTOGRAPHY

Camera Takes, Projects Pictures in Eight Seconds

➤ A NEW TYPE of camera-processor-projector can photograph an image, and then project it up to movie screen size only eight seconds later.

In the self-contained device, the film passes first behind the lens, then through three leakproof processing tanks, and finally onto a take-up reel. The picture, a positive transparency, is projected during the final stage of processing. Resolution is more than 100 lines per millimeter, or more than eight and a half times as clear as television. Operation is completely automatic, with an exposure rate of up to 10 frames per second.

Applications for the device, developed by OPTOMECHANISMS Inc., Plainview, N. Y., include enlarged displays for radar, air traffic control, data processing and medical work.

• *Science News Letter*, 86:104 Aug. 15, 1964

SPACE TECHNOLOGY

New Technique to End Rocket Blow-Ups

➤ SCIENTISTS have found a method of averting those spectacular rocket blow-ups that sometimes occur on the launching pad.

Researchers at Purdue University have devised a technique to avoid the rapid changes in combustion pressure of rocket engines that are often the cause of rocket failure. These changes, known as oscillations, occur when rocket fuels are mixed and cause tremendous heating to the wall of a rocket combustion engine.

By considering factors contributing to these oscillations, such as the rocket's combustion chamber length, its diameter, the type of injectors and the fuels, the researchers were able to create certain minimum requirements for constructing safe combustion chambers.

These findings were reported by J. M. Bonnell, research assistant at Purdue Uni-

versity, Lafayette, Ind., at the annual meeting of the American Institute of Aeronautics and Astronautics in Washington, D. C.

Dr. M. J. Zucrow, director of Purdue's Jet Propulsion Center, and Drs. John R. Osborn and S. N. B. Murthy, professors at the center, collaborated in the study.

Mr. Bonnell said that up to now designers have had to meet oscillation problems on a "trial and error basis."

• *Science News Letter*, 86:104 Aug. 15, 1964

PUBLIC HEALTH

Measles Vaccination Successful in Africa

➤ WHILE THE UNITED STATES was experiencing the worst measles epidemic in recent years this spring, the Upper Volta in West Africa was having a dramatic reduction of measles cases as a result of a mass vaccination campaign.

Deaths are frequent from measles in this new African republic. In villages struck by epidemics, the disease has been known to kill 50% of the children who contract it.

The mass vaccination campaign was conducted this past year under the supervision of scientists from the National Institutes of Health, Bethesda, Md.

Since completion of this first national attempt to control measles with the new vaccine, developed in the United States through the efforts of Dr. John Enders and his colleagues at Harvard, only 133 measles cases and no deaths have occurred among the vaccinated children. Among unvaccinated children who were missed or born too late to participate in the campaign, 5,370 cases and 166 deaths occurred.

• *Science News Letter*, 86:104 Aug. 15, 1964

ARCHAEOLOGY

Datings Yield Clue to Fall of Roman Empire

➤ PERHAPS the Roman Empire did not "fall" after all, but died a slow economic death because of its rivers.

A series of recent carbon-14 datings of artifacts, such as brick and pottery, found in river bottoms in the Mediterranean area has given many clues to the sediment deposition patterns in rivers in ancient times.

Dr. C. Vita-Finzi of St. John's College, Cambridge University, England, reports in *Nature*, 202:1324, 1964, that river conditions in much of the Mediterranean area, particularly North Africa and Italy, now resemble those of classical antiquity.

By knowing the river conditions, such as approximate depth and soil deposition patterns, it is possible to get an accurate idea of the agricultural and commercial activity of ancient Mediterranean areas.

In the valleys north of Rome, Dr. Vita-Finzi has found that deposits in the river beds increased in the Later Imperial period, 100-300 A.D., making it more difficult to sail ships to inland ports in this area.

If this was the general pattern of rivers during that period of Roman history, inland cities may have been almost entirely cut off from commercial activity.

• *Science News Letter*, 86:104 Aug. 15, 1964

IN SCIENCE

GEOLOGY

Continental Slope Off Ceylon Found Steepest

➤ THE WORLD'S steepest continental slope under the sea has been discovered six miles off the east coast of Ceylon by a U. S. scientific expedition.

The slope is more than 45 degrees from the continental shelf to the ocean bottom, compared to a four- to seven-degree incline off the U. S. east coast and one of one to 15-degrees off the west coast. In the short distance of 18 miles the ocean bottom falls from a depth of about 180 feet to 12,000 feet.

The discovery was made by radar soundings from the "Pioneer," a Coast and Geodetic Survey vessel.

• *Science News Letter*, 86:104 Aug. 15, 1964

CHEMISTRY

DDT Build-Up in Forests May Harm Food Chain

➤ THE COLORLESS, odorless insecticide DDT often does its job too well in forests by accumulating in the soil for more than ten years.

Although its ability to last a long time is a useful characteristic of DDT, accumulation of the insecticide in the soil may cause potential contamination of man's food chain. That is, DDT may be contained in a raw product that eventually becomes a consumer product.

Drs. G. M. Woodwell and F. T. Martin of the University of Maine, reported details of their DDT study in *Science*, 145:481, 1964.

Soil samples from four sections of forest land in Maine and New Brunswick, Canada, were taken in the study to determine the extent of DDT residue. This area was chosen because for a decade extensive aerial spraying operation had been carried on to control the spruce budworm.

The first section of land had been sprayed with a total dosage of four pounds of DDT per acre from 1952 through 1958. Although no DDT was applied after 1958, total amounts of the insecticide in the soil increased annually in samples from 1958 through 1961. In 1960 soil samples contained more than one and a half pounds of DDT per acre, approximately three times the amount in 1958.

Soil samples from the other sections showed essentially the same results.

The increase of DDT in the soil, even during years in which no spraying was done, suggests that residues may persist for several years in the tree canopies before ultimately being carried to the soil, the report stated.

The scientists indicated that soil accumulation of DDT, known scientifically as dichloro-diphenyl-trichloro-ethane, has apparently not been harmful to plants.

• *Science News Letter*, 86:104 Aug. 15, 1964

CE FIELDS

MEDICINE

Treatment Increases Disease Organisms

► A SPECIES of organisms that causes boils, *Staphylococcus aureus*, multiplies when an infected person is treated with the antibiotic tetracycline, a study indicates.

The study was conducted to determine how the organisms were transmitted from human carriers to other persons. Three carriers, two of whom were artificially infected, were used.

When tetracycline was given to the carriers as treatment for the disease organisms, it was found that the organisms increased to a contagious level. Penicillin treatments, by contrast, did not cause the organisms to increase and spread.

The study indicated that tetracycline did not directly stimulate the growth of the disease organisms. Rather, the increase of the organism in the carriers' noses appeared to result from a decrease of other bacteria that inhibited *Staphylococcus aureus*.

Dr. N. Joel Ehrenkranz, associate professor of medicine and chief, infectious diseases division, University of Miami School of Medicine, Miami, Fla., reported the study in the *New England Journal of Medicine*, 271:225, 1964.

• Science News Letter, 86:105 Aug. 15, 1964

ANTHROPOLOGY

Time Short to Study Primitive Peoples

► THE CULTURAL and physical traits of many primitive communities of the world must be studied "before it is too late," a World Health Organization scientific group recommends.

The group's report warns that many tribes and populations in the Arctic, South America, Africa, Asia and the South Pacific are in danger of cultural extinction in the face of advancing civilization.

• Science News Letter, 86:105 Aug. 15, 1964

MEDICINE

Cigarette Radioactivity Linked to Cancer

► FROM RUSSIA comes a new indictment of possible connection between smoking and cancer. Rats injected with an isotope of polonium, an element naturally present in cigarette smoke, developed tumors, in Russian research.

Polonium is one of the scarcest natural radioactive elements known. Evidence that it could be a cancer-causing agent in cigarette smoke was reported by Drs. Edward P. Radford and Vilma Rose Hunt of the Harvard School of Public Health, Cambridge, Mass., earlier this year.

In the Russian experiments, two groups of rats were given minute but different

doses of polonium and studied for tumors and other tissue damage after they died naturally or were sacrificed. Both groups of rats developed tumors in the soft tissues of the hip.

These findings indicate that tumors arise after tissue is injured, depending on the length of time the radioactive isotope is retained in the animal.

This research was translated by the Federation of American Societies for Experimental Biology, Washington (Federation Proceedings Translation Supplement, Vol. 23, July 1964). The study was reported by V. A. Sanotskii and E. V. Erleksova in the Russian journal, *Meditsinskaya Radiologiya*, 8:71, 1963.

• Science News Letter, 86:105 Aug. 15, 1964

DENTISTRY

Destroy Tooth Decay With Laser Light Beam

► A BEAM OF LIGHT could replace the much-dreaded dentist's drill for destroying tooth decay.

Scientists in Cincinnati have found that light from a laser, a device that absorbs energy and reradiates it as a very narrow band of light, has the ability to destroy decay even in areas of teeth hard to reach with ordinary equipment.

The study indicated that tooth decay was destroyed differently depending upon whether the light beam was focused through lenses or left unfocused. The focused laser beam removed dental caries in smaller but deeper regions of teeth while the unfocused beam removed broader, more shallow decayed areas.

Drs. Leon and Bernard Goldman, Peter Hornby, Robert Meyer, all of the Laser Laboratory, Children's Hospital Research Foundation, Cincinnati, Ohio, reported the study in *Nature*, 203:417, 1964.

• Science News Letter, 86:105 Aug. 15, 1964

BIOLOGY

Russian Research Reports Available in Translation

► AMERICAN BIOLOGISTS are given a chance to learn what Russian colleagues are discovering and publishing.

About 5,000 Soviet published articles are reviewed each year by the Translation Project of the Federation of American Societies for Experimental Biology.

One out of five of these Russian reports is translated completely and issued bimonthly to about 12,000 subscribers of the federation's publications, among them 2,500 libraries.

"This experiment of careful selection and wide distribution was initiated as an alternative to the cover-to-cover translations that were started right after Sputnik I went up and people were worried about not knowing what the Russians were doing in science," Dr. Raymond L. Zwemer, director of the project, explained. "The cover-to-cover translations proved to have limited distribution and use as well as costing a good deal of money.

• Science News Letter, 86:105 Aug. 15, 1964

TECHNOLOGY

Laser Radar Spots Clear Air Disturbances

► THE USE of intense light beams to detect air turbulence may make it possible for future airline passengers to avoid spilling coffee on their laps.

Hopefully a special kind of radar system using a pulsed ruby laser device will help scientists map air turbulences in the sky. This kind of radar has shown it can pick up air disturbances in even the clearest conditions.

Working on the system are Drs. Ronald T. H. Collis and Myron G. H. Ligda, both from the Aerophysics Laboratory, Stanford Research Institute, Menlo Park, Calif.

Dr. Collis told SCIENCE SERVICE plans are to put airplane sensors carrying laser radar equipment in the sky to detect clear air turbulence. The equipment has been rebuilt three times to improve its operation since August 1963, when early observations were made with it.

Laser radar sends an intensely strong beam of light into the atmosphere. When the beam hits fine particles suspended in the air, it is scattered back and echoes are received at the sending station.

Drs. Collis and Ligda reported their research in *Nature*, 203:508, 1964.

• Science News Letter, 86:105 Aug. 15, 1964

HERPETOLOGY

Rattleless Rattlesnakes Found on Islands

► ALL RATTLESNAKES do not rattle. A scientific expedition to islands in the Gulf of California has returned with a biological rarity—nine rattleless rattlers. By some structural quirk in the formation of the snake's terminal button, these snakes are unable to develop the rattles that often warn approaching intruders. Only four such specimens were previously on record.

The nine rattleless rattlers, all alive, will eventually be seen in both the California Academy of Sciences, San Francisco, and at the San Diego Zoo.

• Science News Letter, 86:105 Aug. 15, 1964

SEISMOLOGY

Seismic Waves in Earth Caused Waves in Gulf

► PERSONS who thought the six-foot-high waves in the Gulf of Mexico after the March 27 Alaskan earthquake were connected with the temblor were right.

The Gulf waves were created "in resonance" with seismic waves in the ground coming thousands of miles from Alaska through the earth's crust, Dr. William L. Donn of Columbia University's Lamont Geological Observatory, Palisades, N.Y., reported in *Science*, 145:261, 1964. They were not caused by the giant sea wave, or tsunami, that battered the Oregon coast.

The seismic waves even caused water to wash over the sides of swimming pools at some places in Texas and Louisiana.

• Science News Letter, 86:105 Aug. 15, 1964