

SEISMOLOGY

Brine Fountains Spout After Utah Earthquake

FOUNTAINS of brine and mud volcanoes were numbered among more than one hundred new springs that broke from the floor of the desolate and uninhabited Hansel Valley at the north end of Great Salt Lake, when the recent earthquake tore the desert rocks and soil with mile-long rents.

Three great faults were formed in the Hansel Valley floor. Their length ranged from a fourth of a mile to over a mile, with a vertical displacement of "throw" varying from six to fifteen inches. One of the fissures is six inches wide and sinks into the earth to an unknown depth.

Occasioned by the fracturing and settling of the valley floor, more than one hundred new springs appeared. Most of them flowed for only a few hours. Some of the new springs, however, are still producing salt water.

Scores of mud volcanoes also resulted, with cones ranging from one to ten feet in diameter. The great Locomotive Springs temporarily disappeared, only to continue flowing half an hour later, with increased volume.

The earthquakes were occasioned by movements on one of the most easterly of the basin-range faults. If the earthquake had originated in a populous locality, its results would undoubtedly have been disastrous.

Science News Letter, March 24, 1934

ANTHROPOLOGY

Museum Party to Study Peoples Never Recorded

OFF TO the Near East to measure and photograph strange tribes who have never submitted to the camera or the anthropologist's calipers, Henry Field, assistant curator of physical anthropology at Field Museum of Natural History, Chicago, is now en route to Europe.

This expedition will begin its work at Baghdad where Mr. Field will add local workers to the expedition personnel. It is hoped to capture for science about 500 Kurds. Only their photographs and anthropometric measurements will be carried away by the scientists. Then the Rowanduz, a gorge in the mountains that has never before been entered by scientifically trained persons, will be visited. In this wild region there are said

to be caves with animal drawings on their walls. And it is said that the animals are those that do not exist now. In this area also may be found natives still clad in mail and chain armor, introduced in the Crusades.

The anthropological exploration will then extend to Teheran, Persia's capital, where groups of natives not yet measured by science will be studied.

The Soviet controlled areas of the Caucasus will be visited. There the Khevsoors, the Svans, and other peoples will be "captured" for science. The party will return by way of Moscow where Mr. Field will study the museums and researches of the Soviet scientists.

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PHYSICS

German Atom Expert Heads New Laboratory

PROF. OTTO STERN, expatriate German physicist known for his atom studies, now presides over a laboratory at the Carnegie Institute of Technology established for him through a \$25,000 grant from the Buhl Foundation.

Investigations of the structure of the atom by means of the "molecular beam" method developed by Prof. Stern and his collaborators at the Universities of Frankfurt and Hamburg will be continued. Prof. Stern and his assistant, Prof. I. Estermann, have already begun studying deuterium, the heavy weight hydrogen and the heavy water that it forms.

In the molecular beam method of physical experimentation, a gas from the element under study is passed through a fine hole into a chamber where a high vacuum is constantly maintained. Due to the high vacuum, no collisions between the molecules occur and each molecule travels in a straight line. By a series of fine slits the direction of the molecules is controlled and a fine beam is cut out. This is the "molecular beam." By directing the beam through the region of a magnetic field some of the atoms are deflected from the straight course, and a measurement of the deflection has enabled the physicist to calculate the magnetic moment of the atom—the magnetic force required to deflect them from a straight path. By applying these studies and also those they have made in wave properties of matter, Prof. Stern and his collaborators have discovered many facts about the structure of the atom.

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IN SCIEN

COSMOLOGY

Abbe Lemaitre Awarded Francqui Foundation Prize

ABBÉ GEORGES LEMAITRE, the Belgian priest-cosmologist, was awarded the annual prize of the Francqui Foundation for his contributions to science which have increased the international prestige of Belgium. The prize is 500,000 Belgian francs (approximately \$25,000.)

Abbé Lemaitre originated the expanding universe theory. Until February he was an exchange professor at the Catholic University of America and the previous year he visited America as a fellow of the C. R. B. Educational Foundation which was established by the war-time Commission for Relief in Belgium.

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ASTRONOMY

Unusual Minor Planet Sighted From Algiers

A NEW heavenly object, probably a peculiar asteroid or minor planet, has come within range of large telescopes, the Harvard College Observatory has been informed by the central astronomical reporting bureau of Copenhagen. The discovery was made by L. Boyer, assistant at the Algiers University Observatory, located at Bouzareah.

Boyer's object, as it is known after its discoverer, is in the constellation of Leo, the lion, nearly overhead in the late evening sky. It is of the twelfth magnitude and too faint to be seen even in small telescopes. It has been sighted from America and has had its position determined by Dr. Fred L. Whipple at Harvard's Oak Ridge Observatory, Prof. L. E. Cunningham at Harvard's Cambridge Observatory, and H. E. Burton at the U. S. Naval Observatory.

The periodic Schwassmann-Wachmann comet increased from magnitude 18 to the still faint, but brighter, magnitude of 13, between March 10 and 14, Yerkes Observatory reported.

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CE FIELDS

ORNITHOLOGY

Unmated Bobwhite Males "Mother" Incubator Chicks

BACHELORHOOD does not make male bobwhite quail morose and socially useless. In fact, it has quite the opposite effect; such lone unmated birds make the best kind of foster-parents for incubator-hatched quail chicks, Herbert L. Stoddard, ornithologist at the Cream Ridge quail preserve in New Jersey, has discovered.

Surplus cock quail were placed in small pens, and each bird was given a brood of about eighteen incubator orphan chicks, just about nightfall when they would most need a parent's care. The steady-going bird bachelors readily adopted their little charges and hovered them during the night.

Within two days each feathered foster-father was allowed to go free into the wild. Later check-ups indicated that their paternal solicitude continued, for all the broods were found to be flourishing. The bachelor "dads" seem to have been good teachers, too, for the young birds they brought up were wood-wise and had all the normal instincts of self-preservation that characterize bred-in-the-wild game birds.

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CHEMISTRY—PHYSICS

Lithium Metal Twins Separated for First Time

TWIN varieties of lithium, the light metal that has been so successfully bombarded in atom smashing transmutations, have been separated, making another step in chemistry's conquest of the isotopes, which are varieties of the same chemical element differing slightly in weight.

The two known isotopes of lithium metal, masses six and seven, were separated in quantities of about one microgram (a thousandth of a milligram) by Dr. M. L. Oliphant and co-workers of Cambridge, England. In a communication to *Nature*, Dr. Oliphant describes how the two kinds of lithium were separated by passing ionized lithium gas

through electric and magnetic fields, the difference in weight allowing the separation. The two kinds of isotopes were collected on metal discs cooled at a very low temperature with liquid nitrogen.

Since the lithium metal isotopes have atomic weights of six and seven, respectively, the one of mass seven weighs one-sixth more than the other. The purity of the separated samples was indicated by their behavior when bombarded with charged hydrogen atoms of both the single and double weight variety. When so bombarded the two lithiums disintegrate, giving alpha particles (helium atom hearts) of different penetrating power.

The obtaining of heavy hydrogen by electrolysis of ordinary water is the most successful separation of isotopes so far accomplished. The mass of heavy hydrogen or deuterium is two, or twice that of ordinary hydrogen. The ratio of weights facilitates the production of relatively large quantities of these hydrogen isotopes of great purity.

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ZOOLOGY

Eighteen Minutes of Sunlight Kills Rattler

SUNLIGHT alone can kill a snake. One of the rattlesnake specimens now on exhibition in the Yosemite National Park Museum was "given the heat" by members of the Yosemite Field School through direct exposure to the sun for 17½ minutes.

When members of the school discovered the snake and wanted it for the museum, decision was made to commit it to death by sunlight. As reported by Ann Hunt, one of the party:

"After 13 minutes of exposure to the sunlight under the watchful eyes of the party it rolled over once or twice, then righting itself it remained writhing somewhat for a few seconds before repeating the action. This it did four or five times. In 17½ minutes it was apparently dead, and remained belly upward, stretched full length. Then a reflex action in the head and about two inches of the body was observed, the mouth opening wide and showing the fangs and trachea very clearly. During this post mortem action the fangs were relaxed, whereas they had been shown in rigid fighting position before. The body after 18 minutes of exposure to the sunlight felt very warm to the touch."

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PLANT PHYSIOLOGY

X-Ray Effects Measured By Slowing of Growth in Plants

X-RAY EFFECTS on the living cell can be measured by testing them on the tips of growing seedlings of oats and other plants, and determining to what extent they render inactive the "growth substance" which they produce. The possibility of developing such a biological technique for X-ray measurement is suggested in *Science* by Folke Skoog, research worker at the California Institute of Technology.

Mr. Skoog's work was based on the discovery, first made prominent by Prof. F. A. F. C. Went, a leading Dutch plant physiologist, that if the tip of an oat seedling be cut off and placed in a little block of agar, a kind of plant gelatine, something that causes plants to grow faster oozes out of the tip and into the gelatine. If the agar block be then placed on another decapitated seedling, this mysterious "growth substance" passes into it and causes it to grow faster.

Mr. Skoog's discovery is that if these blocks, "loaded" with growth substance, are exposed to the action of X-rays and are then put on the decapitated seedlings in the usual way, the growth-promoting action is lost, wholly or in part. Something that the X-rays do to the growth substance destroys its power.

X-rayed seedlings show a decrease in growth rate, Mr. Skoog states. But if a block of agar that has not been X-rayed is immediately placed on their cut ends, they retain their power of growth. This appears to be an indication that the growth substance is destroyed in the living plant as well as in the experimental agar blocks.

Although the X-ray dosages used in the experiments were small, none was found so small as to have no effect.

A side-issue to the experiments is the observation, recorded by many previous workers, that mild doses of X-rays greatly increase the tendency of plants to form buds and branches. Mr. Skoog states that growth substance has an opposite effect, suppressing their formation. It would seem possible, therefore, that the apparent stimulation of bud formation by X-rays is in reality a negative effect, being due to the destruction of the bud-suppressing power of the growth substance, rather than to a direct promotion of bud formation.

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