

operator to observe the effects of treatment in the stomach, especially in cases of gastritis.

Drs. Swalm and Morrison pointed out the importance of the extensive observation of the treatment of gastritis under direct control of gastroscopic visualization of the stomach and its response to therapy. Experience has shown, furthermore, they pointed out, that X-ray diagnosis of gastritis is unreliable since it is not corroborated by direct visualization. They further pointed out, however, that it cannot be gainsaid that the hypertropic variety of gastritis can often be detected roentgenologically by the mucosal pattern, particularly in experienced hands.

Drs. Swalm and Morrison further pointed out that certain forms of chronic gastritis can respond satisfactorily to treatment, but that there are two forms which are unresponsive to present methods of treatment. These are the two forms which are particularly suspected to be possible forerunners of cancer and ulcer of the stomach.

In conclusion Drs. Swalm and Morrison made a strong plea for special investigation into new methods of treatment for these two conditions of the stomach. They may be proved later to be of particular importance in cancer prevention.

Science News Letter, May 14, 1938

OCEANOGRAPHY—PHYSICS

Guide Earthquake-Producing Apparatus to Sea Bottom

Kites and Balloons Leave the Sky for the Sea Depths In New Service for Science; Lava Rivers Do Not Run

A NEW way of mapping the bottom of the ocean has been devised by science. Novel apparatus will create artificial earthquakes on the ocean floor and record the vibrations of the underlying strata as a clue to their make-up.

Kites and balloons, normally inhabitants of the ether up above, will be sent below the surface of the sea to guide mile-long equipment to the bottom and to return it automatically for scientists to inspect when its recording task is done.

A mile-long cable, to which are attached dynamite charges, microphones, recording equipment and clockwork control mechanism, will be strung out along the bottom of the sea, guided only by the kite. The cable serves as the kite's tail. An oil-filled balloon will float the apparatus, freed automatically of ballast, to the surface at the conclusion of the experiments.

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following epicenter:

Thursday, May 17, 12:08.7 p. m., E.S.T.

In Makassar Strait, between Islands of Borneo and Celebes. Latitude 1 degree north, longitude, 119 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

Dr. Maurice Ewing and Allyn Vine of Lehigh University, who have already conducted experiments with earthquake-producing equipment moored to a surface craft by means of a long cable, described their new plans before the American Geophysical Union meeting.

Credit for the idea of using the oil-filled balloon as the means of returning the valuable apparatus and the records is given by the two scientists to Auguste Piccard, celebrated stratosphere flyer now preparing for bathysphere exploration.

The kite-and-balloon scheme has been tested in the swimming pool at Lehigh University by means of scale models and is expected to be applicable to any depth required for the ocean-floor studies, they declared. A balloon six feet in diameter and displacing about 100 cubic feet of water will be used with the full-size equipment.

Not only does this ingenious means of placing the earthquake-producing charges and recording apparatus on the bottom save the cost of the extremely long cable ordinarily required, but since the apparatus rests on the bottom free of any connection with a surface ship, the test equipment is free of vibration from surface waves, Mr. Vine pointed out.

The earthquake-producing equipment, which they used off Woods Hole, Mass.,

last summer, consists of three charges of dynamite, microphones to pick up the vibrations of the ocean floor when the dynamite is fired, batteries and clockwork controls. The dynamite fire is controlled by clockwork, as is a release device which drops the ballast required to drag the equipment to the bottom when the charges have been fired.

Lava Rivers Flow Very Slowly

Volcanoes do not pour their rivers of lava down the luckless countryside in a clear hell-broth that runs like water over Niagara to waste forests and plantations with flame. "No thin broth, but a very thick porridge," was the simile used by Dr. T. A. Jaggar, noted volcanologist who lives in a house on the edge of Kilauea's crater.

Rivers of lava do not run; they creep. A mile a day was the speed of the lava flow that threatened the town of Hilo some time ago and had to be stopped by airplane bombs, Dr. Jaggar stated.

The forward creep of one of these streams of thick lava is an impressive and very strange thing to watch, the speaker continued. As it is extruded from the volcano—usually from a crack on its side rather than from the crater—it oozes forth in one big stream. This break up into a large number of smaller streams that flow in close ranks side by side, like a hank of rope. This ropy type of lava is called by a name originated in Hawaii, pahoehoe—pronounced pah-hoey-hoey.

As each streamlet of the pahoehoe pushes itself forward, it roofs itself over with a thick, solid crust, so that the entire stream comes to flow in a tunnel of its own making. Even the forward end of the lava is covered with a thin crust or membrane, which it constantly breaks through and as constantly reforms. The moving tip of a pahoehoe streamlet Dr. Jaggar likened to an elephant's toe.

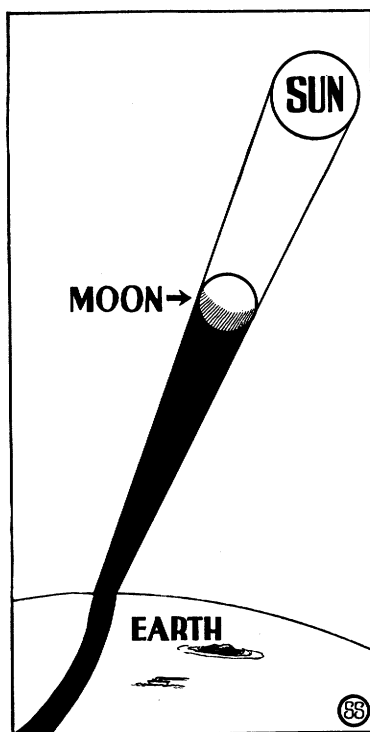
Stopping the recent flow that menaced Hilo was not a military man's idea,

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ECLIPSE MAY 29

The moon will eclipse the sun May 29. But the path of totality streaks across a bleak section of the southern Atlantic Ocean, where there are few accessible islands and little hope of good weather. This diagram shows how an eclipse occurs: the moon comes between the sun and the earth. The path of totality is the moon's shadow or umbra on the earth. A belt (not shown) on each side the path of totality is partially darkened by partial blocking of the sun by the moon. This belt is known as the penumbra.

nor yet his own inspiration, Dr. Jaggar revealed. At first the proposal was to pack a lot of dynamite to the critical point on muleback, but a planter pointed out that bombing planes could not only find the lava tunnels much more easily in the dense forest but could attack them more effectively when found.

Neither was the bombing attack conducted against the moving front of the lava columns, the volcanologist said. That would not have stopped them. In true modern air-warfare style, the planes struck at the base of operations—the heads of the lava streams just as they emerged from the slope of Mauna Loa. With 600-pound bombs of TNT they blasted in the roofs of the tunnels. This permitted the escape of the gases that were the principal source of heat for the lava. With their power supply thus cut off the streams were stopped at their source.

Science News Letter, May 28, 1938

ANTHROPOLOGY

New Fossils Add to Knowledge Of African Man-Like Ape

Canine Tooth Unlike Chimpanzee's in Either Size or Shape; Teeth in Place in Jaw Are Spaced Human Style

By E. N. FALLAIZE

Fellow, Royal Anthropological Society

A NEW connecting link between man and apes is forged by a fossil half-jaw discovered in South Africa. The new-found relic consists of the upper right jaw, with four teeth in place, and part of the bony palate, belonging to *Australopithecus*, the famous man-like ape of Taungs. The discovery is reported by Prof. Robert Broome of the Transvaal Museum. (*Nature*, May 7)

Australopithecus was first recognized and named by Prof. Raymond Dart in 1925, when a fossil skull of a new and primitive type, apparently half-way between chimpanzee and man, was found at the mining center of Taungs in the Transvaal. But this specimen was not full grown, representing a stage of growth of about five years of age. Most scientists, therefore, have since held that this skull did not stand in the human line of descent, but was to be regarded as an immature specimen of a new type of fossil chimpanzee, though in certain respects presenting human resemblances, possibly due to the fact that it was not full grown.

A few months ago Prof. Broome showed that this view was probably wrong, when he announced that he too had found further relics of *Australopithecus* in the form of a number of teeth, which while undoubtedly belonging to the fossil type identified by Dart, were slightly different from the teeth of that skull, approaching even more closely to human teeth.

Prof. Broome's present discovery is much more important than that. The lower canine is so much like the human that at first Prof. Broome hesitated to describe it as belonging to *Australopithecus*. Neither in shape nor size does it bear any close resemblance to the tooth of a chimpanzee.

The crucial discovery, however, is that of the part of the upper jaw. The teeth in position in the upper jaw are the second incisor, the canine, the first premolar and the first molar. The canine

is not much larger than in man, and is worn down to the same height as the second incisor and the first premolar. In the apes the canines are much larger in proportion to the other teeth and sometimes are almost like small tusks. But even more significant is the fact that the second incisor is situated close up to the canine. The importance of this lies in the fact that most students of the teeth of man and the ape are agreed that it is an infallible mark of a human character in dentition, when there is no gap between the front teeth and the canine teeth, as there invariably is in the teeth of the ape.

The preservation of part of the palate is also of the very (*Turn to Next Page*)

A Symposium on Cancer

Addresses by

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M. T. Macklin Emil Novak
Edgar Allen C. C. Little
S. P. Reimann W. H. Lewis
Henri Coutard J. B. Murphy
Gioacchino Failla

These papers summarize the growing body of scientific knowledge about cancer as it bears on public health problems, the clinical practice of medicine, and experimental biology.

The contributors, representatives of leading laboratories in this country and abroad, are men whose experimental work and observation of cancer cases have contributed significantly to the changing concept of cancer.

Their conclusions are of first importance not only to medical workers in the field of cancerology but to all clinicians, persons interested in public health policies, biologists, biochemists, physiologists, and plant pathologists.

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