

occur when the animal's sensory nerves are stimulated, and from this observation the scientists hope to find how the brain activity is linked with the world outside, for example, what happens in the brain when you feel a touch on your arm. A difference between the electric messages picked up from the brain and those of nerves was found by the British scientist, Dr. Adrian.

The electrical disturbance which travels as an impulse along a nerve fiber spreads along the fiber as a momentary wave—a brief impulse followed by a brief interval of rest and recovery. In the cerebral cortex, the gray matter of the brain, on the other hand, instead of the abrupt spikes observed in a record from an active nerve fiber, there are more gradual large electric oscillations

which form a series of waves of smooth contour. These are the brain waves.

The information being obtained about the brain and nerves by electrical means is expected to revolutionize our whole knowledge of the way the human mechanism works, in the opinion of some scientists. Commenting on these advances, Prof. C. Judson Herrick, of the University of Chicago, recently said: "I venture the prediction that the electrobiological era now beginning will yield as revolutionary changes in our conceptions of the physiology of the nervous system as the invention of the microscope inaugurated in anatomy."

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Science News Letter, July 6, 1935

## GEOLOGY

## Earth Is Between 1850 And 3500 Million Years Old

**H**OW OLD is the earth? Write it down in the family album that its age is between 1850 and 3500 million years. This is the verdict of scientists speaking at the symposium in Los Angeles on "The Geologic and the Cosmic Age Scales."

The meeting, sponsored jointly by the American Physical Society and the Astronomical Society of the Pacific and held at the University of California at Los Angeles, disclosed the different ways science dates the approximate "birthday of the earth" over a thousand million years ago.

One technique is called the "hour glass" method since it is based on the amount and rate of sedimentation laid down by erosion over millions of years. It is comparable to measuring time by using the flow of sand through an hour

glass. The difficulty is that no one can be sure that the rate of sedimentation was anywhere near constant through the long periods of time involved, said Dr. George D. Louderback of the University of California.

Much more accurate is the radioactive "time clock" method described by Dr. Robley Evans of Massachusetts Institute of Technology. Certain rocks of the earth contain the elements thorium and uranium, which continually disintegrate and finally form lead. The rate of doing this is unchanged by any natural phenomena yet found by science. Thus, the ratio of the lead to the thorium or uranium present shows how old the rock is.

Still more accurate is to measure the amount of the gas helium present in the sample. This gas is formed as the radioactive elements break down and shoot off alpha particles which are really the cores of helium atoms.

Finally, the impact of the alpha particles on the surrounding material forms, over long periods of time, very small haloes or rings. Some specimens of mica show these rings very well. The age of the sample can be determined by studying the size and fineness of these haloes.

All these methods, as well as others based on astronomical considerations, point to the earth's age—between 1,850,000,000 and 3,500,000,000 years.

Science News Letter, July 6, 1935

## ASTRONOMY

## African Astronomer Discovers New Comet

**A** NEW object in the heavens has been reported to astronomers throughout the world by the International Astronomical Union bureau.

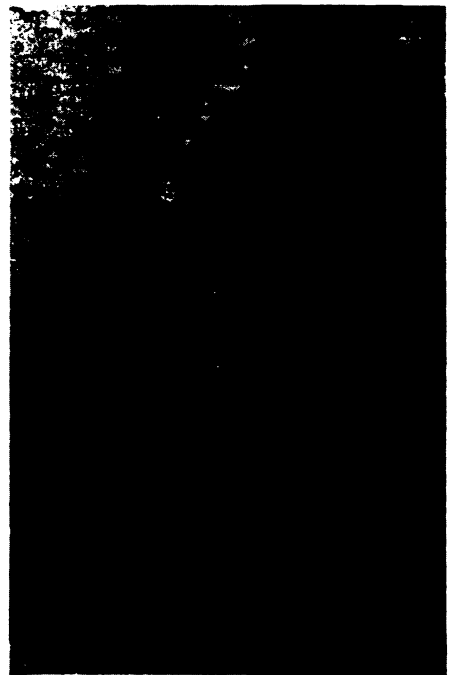
The object is a comet and was discovered by Dr. Cyril Jackson of the Union Observatory, Johannesburg, South Africa.

Of the thirteenth order of astronomical brightness when found (June 19), the object was much too faint to be seen with the naked eye. It appeared low in the southeast sky just north of the bright star Antares, in the constellation of Scorpius. The astronomical coordinates were right ascension, sixteen hours, forty-four and three-tenths minutes; declination, minus nineteen degrees and forty-eight minutes.

The new comet was later sighted (June 24) by astronomers at Harvard College Observatory, Dr. Harlow Shapley reports.

Dr. Fred L. Whipple and Dr. L. E. Cunningham of the Observatory staff find that the brightness of the newest comet is diminishing. On June 24 it had dwindled to the fifteenth order.

Science News Letter, July 6, 1935



**A CLOSE-UP**

Showing the appearance of a section of the huge fulgurite shown on the facing page.

### ● RADIO ●

Tuesday, July 9, 3:30 p. m., E.S.T.  
THE GEOLOGY OF THE DIAMOND,  
By Dr. F. L. Ransome, Professor of Economic Geology, California Institute of Technology.

Tuesday, July 16, 3:30 p. m., E.S.T.  
WASTE BY WIND AND WATER, by H. H. Bennett, Director, Soil Erosion Service, U. S. Department of Agriculture.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.