

## SCIENCE NEWS

*Science Service, Washington, D. C.*THE RELATIVITY THEORY AND THE  
ETHER DRIFT

THE Einstein theory of relativity must fall or at least require radical modification, if the experiments performed at Mt. Wilson, in California, by Professor Dayton C. Miller, of the Case School of Applied Science, are correct, is the opinion of Professor Albert Einstein himself, expressed in a communication from him to *Science Service*.

"If Dr. Miller's results should be confirmed," he says, "then the special relativity theory, and with the general theory in its present form, falls. Experiment is the supreme judge. Only the equivalence of inertia and weight remain, which would lead to an essentially different theory."

The Mt. Wilson experiments were intended to show the motion of the earth through the ether in space by which light and other radiations are supposed to be transmitted. When originally performed by Professor A. A. Michelson, now at the University of Chicago, and when repeated by Professor Miller at Cleveland, no appreciable result was obtained. When Professor Miller repeated it at Mt. Wilson, which is about a mile high, he obtained a marked effect, which seems to vary with the altitude.

According to Dr. Ludwik Silberstein, of the Eastman Kodak Company's Research Laboratory at Rochester, this indicated that the ether was dragged around by the earth at low altitudes, but drifted by at higher ones. According to Professor A. S. Eddington, of the University of Cambridge, England, such an effect would produce a difference in the position of stars as observed from sea level and mountain observatories, and no such difference has ever been observed. Dr. Silberstein answered this objection by the statement that the ether undergoes a peculiar kind of deformation, but Professor Einstein does not agree with him. He says:

"I can not share Dr. Silberstein's conception in case the experiments are correct. He means that with a theory of a deformable but fixed ether the known phenomena can be explained. This, however, is not so. A theory such as that is absolutely inconsistent with the positively proved astronomical aberrations. No theory exists outside of the theory of relativity and the similar Lorentz theory which, except for the Miller experiment, explains all the known phenomena up to date. Under these circumstances nothing remains but to await more complete publication of Miller's results. Then it is to be hoped that a correct decision will develop."

## RADIOACTIVITY AND EARTHQUAKES

THE recent severe earthquakes felt in California and Montana and the mountain slide in Wyoming have aroused interest in the theory of Professor J. Joly, English geologist, on radioactivity as the possible cause of quakes. It is a well-known fact that throughout the entire earth's crust minute quantities of radioactive elements

exist, mainly thorium and uranium, which are constantly producing heat by breaking down at a rate quite independent of the pressure and temperature found in the outer parts of the earth. The granites which are in the outer layer of the earth's crust contain approximately three times as much of these radioactive elements as the basaltic layer which is deeper, and this latter is twice as rich as the denser and more basic layer of peridotites.

Continents are essentially composed of granite embedded in a sub-stratum of basaltic composition. This has a lower melting point than the granite, and increases in volume about ten per cent. at its melting temperature. And since the basaltic layer is self-heating due to its radioactivity, Professor Joly states that it lacks only the latent heat of fusion to become fluid, and further, that at the present rate of disintegration it must again become fluid in about thirty million years. When this expansion has reached its greatest point the surface crust is correspondingly raised and increased in area about 650,000 square miles. The surface tension becomes so great that continents and ocean floors are split apart. Tidal action starts a slow westerly drift of the still solid continents and the superheated sub-stratum which originally lay beneath a continent now comes to lie beneath the ocean floor which melts away from below until the increasingly rapid loss of heat from the ocean checks and finally ends the process.

The reverse action now begins. Crystallization in the liquid basaltic layer takes place, the vastly increased land area contracts and settles down into the solidifying sub-stratum and the margins of the continents especially are marked by intense compression, producing immense depressions and upheavals. This in brief is the cycle whereby the excessive heat due to radioactivity is accumulated and lost, during which succeeding cycles the ancient Eurasian ranges and the fairly recent Himalayas and Pacific ranges have been thrown up during the different geologic epochs. That such a cycle is nearing completion in the Pacific region is known, due to current observations on the steady sinking of the ocean floor and the regularity of the temblors, most of which are so slight as to be recorded only by the seismograph, but which occur regularly every ten or fifteen minutes.

THE RECORDING AND TRANSMISSION OF  
SOUND

A MAN sitting in an office in Berlin, Capetown or Peking may soon be able to dictate a letter which will be heard and taken down instantly by a stenographer in an office in New York.

This is one of the startling results of an invention perfected in the laboratory of the Berlin Telegraphie Gesellschaft, Ltd., after secret experiments based on the researches of the Danish inventor Waldemar Poulsen. Briefly stated, the invention consists of a means of re-