

possible to make all calculations requiring tabular numbers, without the chance of error.

Although such a plan does not seem absolutely impossible, it has always excited, in those informed of it for the first time, the greatest surprise. How, it has been often asked, does it happen if the engine knows when the *wrong* logarithm is offered to it, that it does not also know the right one; and if so, what is the necessity of having recourse to the attendant to supply it? The solution of this difficulty is accomplished by the very simplest means.

Science News Letter, October 4, 1930

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PHYSICS-METEOROLOGY

Cosmic Rays Excel Barometer As Indicator of Overhead Air

Dr. Millikan Made a Thorough Check of New Findings Before Presenting Them to National Academy of Sciences

A PRACTICAL use for the cosmic rays that bombard the earth from outer space with amazing penetration and shortness of wave length has been discovered by Dr. Robert A. Millikan, Nobel prize physicist and president of the California Institute of Technology and who, only a few years ago, began to study these rays intensively.

He has discovered within the last few weeks that the instrument used for measuring the cosmic radiation, called an electroscope, as perfected for his present researches, will measure the depth of air overhead at any part of the earth with an accuracy far surpassing that given by the familiar meteorological instrument known as the barometer.

Uses Cosmic Ray Electroscope

The cosmic ray electroscope he has reported to the National Academy of Sciences, "can furnish us with new data about what is happening in the upper air and must assist in the important problem of predicting, if not controlling, meteorological and geophysical events."

Dr. Millikan made his discovery of everyday utilization of this hitherto research instrument during the course of an expedition to within seven hundred miles of the North Pole and two hundred miles of the north magnetic pole.

Carrying five hundred pounds of scientific instruments and slabs of lead with which to shield them from earthly radiations, Dr. Millikan traveled over the new train-a-week railroad to Fort Churchill in Canada on the west side of Hudson Bay. There he set up his electroscope and made observations night and day for a week. He returned from this trip two weeks ago.

He desired observations close to the magnetic pole in order to test the theories of physicists, with whom he disagreed, who held that the cosmic rays were not waves in the ether like light, heat and X-rays, but high-speed electrons. Professor P. S. Epstein, one of Dr. Millikan's colleagues, explained that mathematical theory shows that if the penetrating cosmic radiations were

high-speed electrons they should be deflected in the magnetic field of the earth and therefore be much more plentiful near the magnetic poles.

The observations show that the cosmic radiation is an ether wave radiation that comes to the earth with constant and uniform intensity at all latitudes. Observed variations in it are due to changes in the thickness of the shielding air through which they must pass to reach the surface. This fact allows Dr. Millikan to propose that the electroscope be used as an instrumental mate to the barometer in every weather bureau station.

Dr. Millikan reaffirmed his belief that cosmic rays are signals from the depths of space of the continuous formation there of the common abundant elements helium, oxygen, silicon and iron out of hydrogen.

This is hopeful reassurance to those who have felt that the whole universe is like a great watch running down. There is evidence in the stars and nebulae that matter is being changed into light and therefore dissipated to the ends of the universe. Dr. Millikan's view indicates that somewhere there may be a rebuilding of matter in progress.

Science News Letter, October 4, 1930

ZOOLOGY

Borneo Monkeys Imitate Men With Both Nose and Voice

ONE of Nature's most striking living caricatures is the proboscis monkey which lives in the deep forests of Borneo. A group of these creatures shown as they appear in their home among the branches of a pongyet tree is on exhibition in Carl E. Akeley Memorial Hall at Field Museum of Natural History.

The proboscis monkey gets its name from its very prominent and peculiarly shaped long nose, which gives its face almost the exact appearance of certain types of low comedians who appear on the stage with false noses. Its other