

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*

## KEEP ABREAST IN YOUR SUBJECT EARN CREDIT TOWARD A DEGREE

While teaching, use the

### HOME STUDY

courses for *Teachers* in Rural, Primary, Grade and High Schools—or for *Super-visors* and *Principals*, which the University gives *by correspondence*. 450 courses in 45 subjects yield credit toward either a Bachelor's degree or Teaching Certificate.

Write for booklet giving full information.

**The University of Chicago**  
577 Ellis Hall Chicago

## New Volumes In The APPLETON NEW WORLD OF SCIENCE SERIES

WATSON DAVIS, Editor

### THE CONQUEST OF LIFE

By *Theodore Koppányi*. An entertaining review of biology which sets before the general reader the groundwork of the science. The author is an eminent biologist whose researches in Vienna, New York and Chicago have aroused wide interest.

*Illustrated, \$2.00*

### THE GREEN LEAF

By *D. T. MacDougal*, Desert and Coastal Laboratories, Carnegie Institute, Washington. An absorbing study of plant life, which describes the structure and functions of leaves as found in various climates, and discusses the part played by leaf-bearing plants in sustaining life and civilization.

*Illustrated, \$2.00*

Recently Published

ANTARCTIC ADVENTURE AND RE-SEARCH—By *Griffith Taylor*. The climate, geography, resources and exploration of the South Polar region.

*Illustrated, \$2.00*

### NEW FRONTIERS OF PHYSICS

By *Paul R. Heyl*. The revolutionary advances in physics discussed by an authority.

*Illustrated, \$2.00*

D. APPLETON AND COMPANY  
35 West 32nd Street New York

## 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

**O**NE 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

features are exceedingly human-like.

The monkey is a distinct species found only in Borneo. It grows to quite large size, and has brightly-colored hair. In the young the nose is much less prominent, attaining its full development and grotesqueness only in the adult animals. These monkeys frequent the tops of lofty native trees, and are often seen gathered in small troupes, sitting in the sunlight where there are breaks in the density of the forests overlooking the banks of rivers.

The comedy aspect of the monkeys is carried out also in their voices. They utter long-drawn-out resonant cries resembling the deep tones of a bass viol in the hands of an extremely poor player. Among the natives of Borneo the monkeys are called "blanda" and "ra-song." They are at home in the water, and often swim wide stretches of river.

In the museum group, which is a gift from Martin A. Ryerson, are four fully grown males, two females, and one young monkey.

*Science News Letter, October 4, 1930*

#### MEDICINE

### Newly Found Substance Promises to Cure Pneumonia

A NEWLY discovered substance which promises to give protection against pneumonia and to cure the disease has just been reported to *Science* by Drs. Oswald T. Avery and Rene Dubos of the Hospital of the Rockefeller Institute for Medical Research in New York City. The new substance is probably an enzyme. It attacks the outer coating of a pneumonia germ.

The pneumonia germ's ability to invade the tissues of the body depends partly on this outer coating or capsule. Pneumonia germs, scientifically called pneumococci, are of three types, each type having a specific kind of sugar in its capsule. The sugar of the Type III pneumococcus can be split up into simpler compounds by the new enzyme, the Rockefeller investigators discovered.

This change in the composition of the germ's invading weapon should make a difference in the germ's effect on the body, they reasoned. Experiments with mice bore out this theory.

From the cranberry bogs of New Jersey comes this new weapon against pneumonia. The organic matter of the soil in the bogs yielded a bacillus from which the enzyme was extracted. This enzyme is effective only against the Type III pneumococci, and its protective value is destroyed by heating.

*Science News Letter, October 4, 1930*



## Visual Instruction Made Easy...

A new instrument, the Overhead Projector, enables an instructor to sit at his desk facing his audience and operate his own machine. It projects the pictures upon a screen overhead, in full view of everyone. Furthermore, the operator sees the pictures exactly as does the audience, since the slides are inserted right side up in front of him. He can point with a pencil to features on the slide which he desires to stress instead of having to stand beside the screen with a pointer. Changing slides is extremely simple and can be done while talking.

This new Overhead Projector is furnished either as a unit or as an attachment which will fit easily and quickly onto Model B Balopticons.

*We shall be glad to furnish literature upon request*

BAUSCH & LOMB OPTICAL COMPANY

644 St. Paul St.,

Rochester, N. Y.



# BAUSCH & LOMB