

GENERAL SCIENCE

# Science President Urges Continuance of Research

## Acclaiming Lack of Depression in Research, Dr. Campbell Deplores Unsympathetic Attitude of Legislatures

**F**EAR AND ANXIETY are prevalent in universities and scientific research institutions and scientists are apprehensive as to the continued financial support of research, President W. W. Campbell of the National Academy of Sciences reported to that senate of American science at its annual meeting in Washington last week.

"The deep depression in the curve representing the recent course of financial and economic events in our country is apparently not matched by a similar depression in the curve depicting the output of new knowledge achieved through research in the domain of the physical and biological sciences," Dr. Campbell said in citing the crowded program of scientific papers over which he presided.

But the immediate future threatens to bring conditions that will be very different, he warned.

Legislatures that appropriate funds for the support of universities which conduct research at public expense for public benefit were described by Dr. Campbell as "in most cases unsympathetic and in some cases as severely hostile."

Warning these bodies of the necessity for the continuance of research where it has been sympathetically nurtured and supported through the years, Dr. Campbell paraphrased the Bible: "Where there is no research, the universities perish."

Dr. Campbell urged also that the scientific work of the federal government in Washington should be preserved and continued because the scientific bureaus of the government undertake work of great benefits to the nation which can not be done by universities or other research institutions. How could the state of Nevada, he asked, do its share in surveying the coasts of America except by the indirect support by its citizens through the federal government of the U. S. Coast and Geodetic Survey?

Federal financial support of science has been obtained, Dr. Campbell said,

"upon the basis of need and merit for the most part, and not at all by political log-rolling, not to any extent whatsoever by the threats of an organized minority," tacit or vocal, to the effect that the Congressman or the Senator who does not vote the financial support asked for will be defeated at the next election."

Confidence was expressed by Dr. Campbell that officials of the federal government will not cut appropriations for the support of existing research activities in unjust degree.

By Congressional act passed in 1863 during the Civil War the National Academy of Sciences is an official agency of the federal government, not supported, however, by federal funds, but charged with the duty of reporting to the government on any subject in science upon demand by any federal department of the government. Dr. Campbell implied that if called upon the National Academy of Sciences would willingly give its counsel in the present emergency just as it has many times in years past.

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GEOPHYSICS

# Earth, Like Sun, Has Corona, Study of Aurora Demonstrates

**T**HE EARTH, like the sun, has a corona—a luminous gaseous envelope extending far out into space. Its existence has been demonstrated by studies of the aurora borealis, or northern lights, Prof. Lars Vegard of the University of Oslo, Norway, told the American Meteorological Society.

The earth's corona, however, shows some marked differences from the sun's, Prof. Vegard explained. The sun's corona, so far as we know, is generated by the sun's own power; the earth's is a product of the action of the sun on gases in the earth's outer atmosphere.

SEISMOLOGY

## Alaska Earthquake "Seen" With Telescope

**H**OW THE ALASKA earthquake of Wednesday night, April 26, was observed with a telescope, rather than with the usual instrument, a seismograph, was related before the meeting of the American Geophysical Union by Earl L. Williams, observer at the International Latitude Observatory at Gaithersburg, Md.

Mr. Williams was seated at his instrument at about ten o'clock at night, he said, when he noticed that the bubble in the sensitive spirit level by which the position of the telescope is checked was sliding back and forth with a slow, even motion, not accounted for by any ordinary local environmental factors. On checking up against seismographic data, it was discovered that the strange behavior of the bubble coincided in time with the arrival of tremors through the earth's crust from the earthquake epicenter 4,000 miles away.

This earthquake registered itself on a large number of seismographs in the United States and Canada. Reports from these observatories, telegraphed to Science Service, were interpreted by scientists of the U. S. Coast and Geodetic Survey as indicating the epicenter to be northwest of the Kenai peninsula at 61 degrees north latitude, 150 degrees west longitude. The time of origin was 9:36 p. m., eastern standard time.

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Furthermore, the earth's corona is decidedly eccentric, being far more extensive on the side of the earth nearest the sun than it is anywhere else.

Auroral displays, Prof. Vegard said, have been measured at heights of from 70 to 700 or 800 kilometers (43 to 490 or 550 miles) above the surface of the earth. Spectroscopic studies of their light indicate that the glow is due mostly to electrically excited nitrogen gas, which apparently exists at considerable density even at those great heights.

"To explain this fact," the speaker

continued, "we assume that in the auroral region the atmospheric matter is brought to high altitudes through the effect of electrical forces, which result from the photoelectric action of sun's rays of short wavelength."

Singularly enough, there are no spectrographic lines indicating the presence of the light gases, helium and hydrogen, at these elevations; or at most they are exceedingly faint and feeble. This runs quite counter to the assumption often made that layers of these "balloon gases" float on the top of the earth's atmosphere. On the contrary, all the gases in the atmosphere seem to be thoroughly mixed.

By comparing spectra of auroral light with those of laboratory light sources at known temperatures, Prof. Vegard concluded that auroral light centers are active at temperatures about 22 degrees below zero Fahrenheit.

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#### ASTRONOMY-PHOTOGRAPHY

### Planet Photographed Eclipsing Star

**P**HOTOGRAPHS showing the rare event of the eclipse, or occultation, of a star by a planet, which took place late on the night of April 20 and during the wee hours of the twenty-first, were made with the great forty-inch refracting telescope of the Yerkes Observatory, Williams Bay, Wis., by Otto Struve, C. T. Elvey and W. W. Morgan.

The star was of the ninth magnitude, far below the limit of naked-eye visibility, so that a powerful lens was required to get its photograph at all, especially as it approached and began to be lost in the brilliant light of the great planet. Being such an inconspicuous object the star has no name of its own, only a number in an astronomer's catalog: "BD plus 8 degrees 2456."

Describing the photographs, from which the drawing was made for SCIENCE NEWS LETTER, Director Struve of the Observatory said: "It will be noticed that on the first plate the star is quite far away, while on the last it nearly touched the limb (edge) of Jupiter. The four black spots on the other side of Jupiter are the four brightest satellites of the Jovian system.

"It is reasonable to expect that about one occultation (by Jupiter) in four or five years will be observable at any given observatory."

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#### EVOLUTION—MATHEMATICS

## New Mathematical Method Charts Course of Evolution

**A** NEW mathematical method, which makes the course of evolution a measurable thing, was demonstrated to the National Academy of Sciences by Dr. Harry H. Laughlin of the department of genetics of the Carnegie Institution of Washington, located at Cold Spring Harbor, N. Y.

It takes cognizance of hereditary differences hitherto considered too small to be bothered with, and by charting the direction of their development with great exactitude will enable scientists to foretell, on the basis of measurements of a few generations, the present trend of evolution at the close of a great many generations.

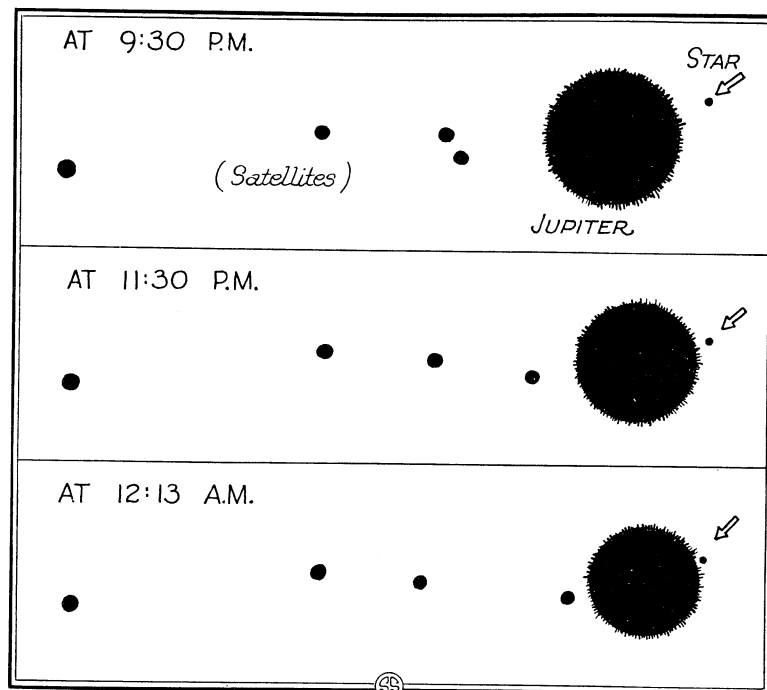
Since the application of the Mendelian principles to the science of genetics, students of that subject have been interested quite largely in characters determined by single "genes" or hereditary units, or at most by a small number of genes. But some of the hereditary traits of greatest practical and social importance, like running ability in thoroughbred horses or height in men, have defied analysis into separate genes. They are probably due to the in-

teraction of thousands of genes, and only their net results, as they show themselves in departures in offspring from average conditions in parental stocks, can be measured.

Dr. Laughlin's method takes such a departure from a parental average—say an increase of a fraction of an inch in height of offspring over height in parents—and maps its course through several generations. On the same graph he traces another line, representing the thing with which comparison is to be made. Neither line is straight, but in both a direction can be traced.

The two lines tend to converge, and the point where they intersect represents the culmination of the evolutionary development of that particular character—the genetic mean. This is the present evolutionary goal.

One line of development to which Dr. Laughlin applied his method had the advantage of being all finished and done with, so that he could make his prediction and then look to see whether it had been fulfilled. It had to do with the skull-length in titanotheres, monstrous beasts that ran their course dur-



ONCE IN FIVE YEARS