

as foreign bodies and therefore, if the giant cells are found empty, the hypothesis is justified that all the other circumstances in the tubercular process mean that earlier they lodged one or more bacilli and this cause gave rise to them.

The bacilli may also be observed unstained in an unprepared condition. For this it is necessary to examine a little material from a place which contains considerable numbers of bacilli, e. g., a little gray tubercular nodule from the lung of a guinea pig which has died from inoculated tuberculosis,—with the addition of distilled water, or better, blood serum, which happens to be most suitable for avoiding currents in the liquid on the stage of the high power microscope. The bacilli then appear as very fine rods, which show only molecular motion, but do not possess the slightest motion of their own.

Under certain conditions to be described later the bacilli form spores in animal bodies and in fact the individual bacilli form several, usually two to four spores, oval in shape, which are distributed at symmetrical distances along the length of the bacillus. . . .

*Science News Letter, March 19, 1932*

## Hans Christian Oersted

When Oersted in 1820 wanted to inform the world that he had discovered the relation between the old force of magnetism and the new force of electricity, he wrote the account in the universal language of Latin and circulated it among scientists of all countries. To his account he signed his name in the Latinized form "Johan." In England the editor of *Annals of Philosophy* translated it into English, and gave his name the English form of "John Christian Oersted." This translation, made in the year of the discovery, was used as a Classic of Science in the SCIENCE NEWS LETTER, February 20, 1932. The possibility that this century-old mistranslation may mislead modern students has been called to our attention by Niels C. Ortvad, President of the Detroit Motorbus Company, who presented to the Museum of Science and Industry, in Chicago, the bronze tablet, executed by the sculptor A. J. Bundgaard, from which the illustration accompanying the Classic was taken.

*Science News Letter, March 19, 1932*

The slow process of erosion has changed the surface of the earth more than all the earthquakes, volcanoes, tidal waves, tornadoes, and excavations in history.

## GEOPHYSICS

# Wobble of Compass Needle Reveals Inner Earth Secrets

## Study of Terrestrial Magnetism Also Helps Explain Conditions of Upper Atmosphere and Activity on the Sun

A BETTER understanding of events deep within the earth has been made possible during the past few years through research by scientists who know how to read the language of the subterranean happenings as written in the varying of the compass needle from true north, John A. Fleming, acting director of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, has revealed.

Mr. Fleming presented conclusions reached after careful study of all data collected during past centuries including information taken in recent years from more than 10,000 stations established in different parts of the world by the Carnegie Institution. Thus the most complete picture possible of the long period or secular variation of the earth's magnetism is obtained.

"The relation of large and rapidly changing rates of change of the intensity and direction of the magnetic field to the surface structure of the earth can scarcely be accidental," Mr. Fleming declared. "It is natural to expect that there is a causal relationship existing between crustal and subcrustal movements and these magnetic manifestations. Perhaps there are changing mechanical stresses, or possibly a changing distribution of internal heat, which in turn affects the direction or magnitude of subterranean electric currents.

"Thus secular variation changes within the earth's crust indicate an interior more mobile than the exterior layers, not only as a whole but regionally."

The great secular variations, which over the period of actual observation of several hundred years, caused the compass needle to change its direction by as much as 15 to 20 degrees at some places on the earth, are now better understood, following detailed mathematical analyses of data for periods centering around 1842, 1882 and 1922 by scientists of the Department of Terrestrial Magnetism. Thus it is known that the main cause of the secular variation arises from a system of forces embedded in the earth, Mr. Fleming said. This variation

is caused not only by a change in the direction of magnetization but also by a change in its intensity.

Magnetic force has been decreasing more rapidly in the southern, or water hemisphere, than in the northern, or land hemisphere, he continued. The average equivalent intensity of magnetization over land areas is somewhat larger than that over ocean areas.

*Science News Letter, March 19, 1932*

## ARCHAEOLOGY

## Portrait of Seneferu Discovered in Egypt

A PORTRAIT of the Pharaoh Seneferu, builder of the Great Pyramid at Meydum, has been discovered on a limestone slab, says a report just received from Alan Rowe, field director of the University of Pennsylvania Museum expedition at Meydum, Egypt.

The portrait shows Seneferu wearing a close-fitting cap above which are the horns of a ram supporting two curved plumes. The king wears a long false beard and carries a scepter in his hand.

"Importance of the portrait head," says Mr. Rowe's report, "lies in the fact that, so far as is known, it is the only contemporary portrait of King Seneferu ever found in Egypt. Other pictures of the King have been found in Sinai, but only one of them can be called a portrait."

*Science News Letter, March 19, 1932*

## PLANT PHYSIOLOGY

## Frozen-Pack Pineapple Retains Digestive Power

JUICE of pineapple preserved by the frozen-pack method keeps its power to digest proteins. This is one of the results of a series of experiments conducted at the new frozen-pack laboratory of the Bureau of Plant Industry, U. S. Department of Agriculture, under the direction of H. C. Diehl.

It has been long known that the juice

of raw fresh pineapple has in it a digestive enzyme similar to pepsin in its ability to digest proteins. A common experiment in elementary biology, which anybody can perform at home if he likes, is to drop a cube of hard-boiled egg white, which is nearly pure protein, into a couple of teaspoonfuls of pineapple juice. After a day or so the cube will dissolve in the juice. However, heating the juice destroys this digestive enzyme, so that pineapple preserved by methods now in use, while still good fruit, does not have this peculiar value as a "booster" to digestion.

Pineapple preserved by the frozen-pack method, with the addition of either syrup or sugar, has a most attractive flavor and a rich golden color, Mr. Diehl states. Although other frozen-packed fruits are now on the market, pineapple preserved in this way has not yet made its commercial debut.

Other products which have been satisfactorily preserved by the frozen-pack method in the new laboratory are peaches, Japanese persimmons, apples, several kinds of berries, peas, beans, carrots, cauliflower, mushrooms and other vegetables.

*Science News Letter, March 19, 1932*

MEDICINE

**Birth Deformity Being Treated in New Clinic**

**A** CLINIC for a new and special treatment of congenital dislocation of the hip, the most frequent of all deformities with which children may be born, has just been opened at the Lenox Hill Hospital in New York. It will be in charge of Dr. Charles H. Jaeger, who has devised the new and successful non-operative treatment.

Because there are no striking deformities at birth, this unfortunate condition often goes unrecognized until the child begins to walk, Dr. Jaeger explained. By this time serious changes and deformities have occurred in the socket of the hip joint and the head of the thigh bone which make a perfect cure difficult if not impossible. In spite of long and painful treatment, such patients have often been obliged to go through life with a shortened leg and a seriously lessened earning ability.

The new method of treatment consists of holding the leg outward by means of a brace and exerting by means of an adjustable pad a gentle pressure downward and inward upon the upper end of the thigh bone.

*Science News Letter, March 19, 1932*



**THESE 7 GREAT SCIENTISTS**

**want to talk to you in your home**

**DR. ROBERT A. MILLIKAN**, Nobel prize winner in physics, leader in scientific thought and head of the California Institute of Technology, speaks on "*The Rise of Physics*".

**DR. JOHN C. MERRIAM**, authority on the fossil animals and reptiles of western America, president of the Carnegie Institution of Washington, speaks on "*The Record of the Rocks*".

**DR. EDWIN G. CONKLIN**, Princeton University biologist, one of the world's greatest authorities on life processes, speaks on "*The Mystery of Life*".

**DR. KARL T. COMPTON**, eminent physicist, president of the Massachusetts Institute of Technology, speaks on "*Science and Engineering*".

**DR. LEO H. BAEKELAND**, industrial chemist and one of America's industrial pioneers, inventor of bakelite, velox, etc., speaks on "*Chemistry and Civilization*".

**DR. WILLIAM H. WELCH**, of Johns Hopkins University, "Dean of American Medicine" speaks on "*The Tubercle Bacillus*".

**DR. WILLIAM M. MANN**, director of the National Zoological Park of the Smithsonian Institution, leading authority on animal life, speaks on "*Our Animal Friends*".

**S**CIENCE is absorbingly interesting. Scientists bring forth new points of view, new discoveries, new relationships of old discoveries, and thus they themselves are absorbingly interesting as human beings.

Men and women of intellectual curiosity would like to entertain many of these scientists, one by one, in their homes, but this is usually impracticable.

**1** So Science Service, Inc., asked seven great scientists to make phonograph records on subjects which fired their enthusiasms.

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**3** We got portraits of the scientists. We had these portraits reproduced in photogravure process, each on a sheet of beautiful white gravure paper, size 8½" x 9".

**4** On the reverse side of each picture we printed a brief biography of the scientist, together with his complete speech as recorded on the record.

**5** Then we packed pictures and records in a compact mailing carton and found that they could be sold for \$3, postpaid. Seven recordings of seven great scientists with seven photogravure pictures, \$3. We invite your order—send \$3 to Science Service, Inc., Washington, D. C. and ask for a set of "GREAT SCIENTIST" RECORDS.

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