

PALEONTOLOGY

Seek Prehistoric Land Link Between Old World and New

WERE Africa and South America linked by a land bridge, millions of years ago?

The Harvard Museum of Comparative Zoology is sending an expedition late in January to southern Brazil, to seek 175,000,000-year-old fossils that may clear up the mystery.

Heading the party will be Lewellyn I. Price and Theodore E. White, both of the museum staff, whose finding of the world's oldest fossil egg, approximately 225,000,000 years old, was announced a little more than a year ago.

The latest expedition of the pair is designed especially to test the theory held by some geologists, notably Wegener, that the South American and African continents were at one time joined together as a part of prehistoric Gondwana land, which stretched halfway around the southern hemisphere.

Discovery of strikingly similar rock formations and fossilized animals and plants on both continents has given this theory considerable support, although some geologists doubt the hypothesis on the grounds that the South Atlantic

deeps are too old for the continents to have ever been connected.

The region to be visited is the province of Rio Grande Do Sul, in southeastern Brazil, where for more than 100 miles along the Jacuhy river, on the border between the jungle and the pampas, there are rich red sandstone beds of the Triassic age, approximately 175,000,000 years ago.

Extremely rich in reptile fossils, especially those related to the Gondwana hypothesis, this region is practically untouched by scientists. If the fossils from this area resemble those already unearthed in Africa, it will be a strong factor in support of the linkage theory.

The few specimens previously taken from these beds indicate that the Triassic reptiles were about nine feet long and about four feet in height. Despite their heavy tails, they were good runners and were advanced reptiles, approaching the mammal stage.

The Brazilian government is cooperating in the research, which is expected to last for about a year.

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PHYSICS

Cosmic Rays Promise to Test Needed Super-Einstein Theory

COSMIC rays promise to measure immense movements of astronomical masses in the universe, and also to test a new and needed Einstein-like extension of electrodynamics to high energies and powerful electric fields, above 70,000,000 electron-volts, which cosmic rays themselves have revealed.

These two new future uses of cosmic rays were predicted by Dr. Arthur H. Compton, University of Chicago Nobel physicist, one of the leading researchers on cosmic rays, in an address before the American Association for the Advancement of Science and the American Physical Society.

"Studies of the latitude effect and of the variation of cosmic rays with time of day confirm our belief that the rays

come from very remote distances," Dr. Compton said. "There is some evidence that the motion of the earth with the rotation of the Milky Way affects the rays. If this preliminary indication proves correct, it will mean that the rays come from very remote distances indeed, and they will serve as a useful source of information regarding astronomical motions."

Dr. Compton explained the need of new physical theory and how the cosmic rays may help.

"One of the most important recent developments in the study of these rays is the fact that electrons with such high energies do not excite as much radiation as is required by present electrical theory," he said. "The experiments are in

reasonably good accord with the theoretical predictions up to about seventy million electron volts, at which the wave-length of the electron as calculated on quantum theory becomes about equal to its radius as calculated from classical electron theory. At higher energies the action of the electron departs rapidly from the predictions. This means that an extension of present theory of electrodynamics is needed for the regions of strong electric fields, which will be comparable with the extension of Maxwell's electrodynamics introduced by Lorentz and Einstein for the condition of high velocities. If and when such an improved theory is developed, cosmic rays afford one of our very few possibilities for giving it an adequate test."

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PHYSIOLOGY

One of Birth's Mysteries Solved by Hormone Study

ONE of the great mysteries surrounding the way in which human beings come into the world has been solved by discovery that two of the female sex hormones act as the trigger that sets in motion the process of labor that precedes childbirth.

Dr. G. F. Marrion of the University of Toronto reported to the American Association for the Advancement of Science the solution of a riddle puzzling medical scientists, by finding that just before, during and after labor great quantities of active sex hormones flood the mother's body and inaugurate the great experience that each of us must undergo to begin an independent life. The hormones are known as oestrone and oestriol.

During the time that the baby is growing before its birth, the hormones are produced continuously but in ineffective forms. Dr. Marrion found that in the inactive form the hormones are bound up with a kind of sugar, glucuronic acid. When the time for birth comes this combination is broken. It is as though an automobile were kept with motor running ready for service and the clutch were thrown in by the breaking of the fetters that kept the hormones inactive.

A great medical drive to discover the important mechanism of sex and reproduction from the standpoint of glandular secretions has been underway for the past few years. Dr. Marrion's work is one of the latest conquests.

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