

## PALEONTOLOGY

# Rhinoceros-Size Pigs Roamed Western Plains

**G**IANT PIGS of rhinoceros size roamed the plains of North America about 37,000,000 years ago. But horses then were only about the size of deer, and camels, which also lived in North America, were much smaller than those of today.

This somewhat fantastic picture of the distant past is painted by R. A. Stirton, curator of the museum of paleontology at the University of California, who returned recently from South Dakota, where he and his assistants made extensive fossil excavations. These were carried on at Big Spring Canyon, and along the Little White River, near Flint Hill, on the Pine Ridge Indian Reservation. Seventeen skulls of primitive animals were found, as well as various miscellaneous animal remains.

The fossilized remains of the giant pig, the small horses and camel were uncovered in the Flint Hill area, and belong to the lower miocene geologic period. The horses represent a more primitive type than the commonly known three-toed horse. In this section, too, three skulls of primitive beavers were found, which were similar in size

to that of the modern beaver. Remains of smaller pigs were also uncovered. These animals are related to the peccaries living in southern Texas today. Bird bones were found, too, representing both water birds and birds of prey.

At Big Spring Canyon animal remains of the pliocene epoch of about ten million years ago were found. These included a pair of lower jawbones of a bear-dog, comparable in size to the jawbones of the big bears of Alaska today, and a mastodon skull about four feet long. In spite of its tremendous proportions, it is believed that the bear-dog was not more of a meat eater than his present day descendant. The mastodon is believed to have been about the size of the modern Indian elephant.

With the fossils, a large quantity of fossilized hackberry seeds were found, indicating the type of forest in or near which the animals lived.

Accompanying Mr. Stirton on the trip were Curtis J. Hesse and Paul O. McGrew, research assistants; Hugo F. Georiz, senior in the University, and Nathan J. Geer, field assistant.

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signal to travel to Algiers and back varied by 1/1000 second, the whole time required for the journey being about 1/100 second. During the day the figure remained quite steady.

The same phenomena were observed with waves of 33 meters and even of 349 meters. With the long wave, however, which is within the broadcast range for the United States, the fluctuations were much less rapid.

## Depends on Height of Layer

Radio waves, when traveling long distances are reflected back and forth between the earth's surface and a reflecting layer high above the surface. Because of this zig-zag path, the time of travel between two distant points is greater than if the waves followed the earth's surface. The fluctuations in time shown by the experiments of Drs. Decaux and Galle indicate that the height of the reflecting layer is continually changing at night, but remains at a fairly constant level during the day.

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## AERONAUTICS

## New German Airship Nearing Completion

See Front Cover

**T**HE NEW German zeppelin LZ-129, now under construction at Friedrichshafen, Germany, will shortly go into operation on the South Atlantic "run" from Europe to South America.

Only slightly longer than the U. S. Navy airship Macon, the LZ-129 will, however, be the world's largest airship, for it will be buoyed up by over 7,000,000 cubic feet of hydrogen gas. This exceeds the volume of the Macon by some half million cubic feet.

The LZ-129 will supplement the veteran Graf Zeppelin on the trans-Atlantic route across Spain, the South Atlantic and Brazil.

In its internal appointments the LZ-129 will be as luxurious as a crack ocean liner. There will be two promenade decks, large staterooms for passengers, baths with running water, and most unique of all, a special fireproof smoking room. In addition there will be quarters for a crew of 35 and storage space for freight amounting to ten tons.

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A thought for next winter: electric-heated uniforms and shoes for traffic policemen have been devised by the General Electric Company.

## RADIO

# Time Required For Travel of Radio Signals Varies at Night

**T**HE TIME required for short radio waves to travel between two distant points fluctuates constantly and rapidly by night to the extent of about ten per cent., whereas by day there is almost no fluctuation.

This is the substance of a report made to the Paris Academy of Sciences by Dr. B. Decaux and Dr. J. B. Galle.

The method used was to send the note of an organ pipe from Paris to Algiers on a radio wave of 24.15 meters, and to return it from there to Paris on a wavelength of 24.65 meters. The note received in Paris was then combined with the direct note from the original organ pipe, reduced to the same intensity, in a cathode ray oscillograph.

In this instrument the outgoing note caused a beam of electrons to vibrate in a vertical direction, the incoming note caused it to vibrate in a horizontal direction. The result of the combined vibrations was to cause a little spot of light, produced by the electrons on a screen, to travel around in an oval or ellipse, called a Lissajou figure. Any variation in the time required for the radio signal to travel from Paris to Algiers and back was indicated at once by a change in the form of this figure. The ellipse became either flatter or rounder.

At night the figure continually changed its form so rapidly that the changes could not be followed. They showed that the time required for the