

ful mosaic pictures of Christian art in the church.

Prof. Vasiliev will examine the mosaics so far uncovered, and will search the manuscripts stored in old crypts and vaults of the building, for light on the little-known Empire of Trebizond. On the history of this Empire, Prof. Vasiliev is a leading authority, although Arabic and Byzantine manuscripts have yielded him only a smattering of information.

Exploring the riches of the St. Sophia documents, Prof. Vasiliev expects to use no less than a dozen languages in his effort to re-establish in history an almost forgotten empire.

Science News Letter, March 10, 1934

METEOROLOGY

Winter Tornadoes Rare But Causes Are "Orthodox"

WINTER tornadoes, such as the storms that took two score lives in the South on Sunday afternoon, Feb. 25, are unusual only in the season of their occurrence, scientists of the U. S. Weather Bureau told Science Service. The basic physical causes that bring tornadoes into existence are the same, whatever the season.

The state of great atmospheric instability that can start these intense twisting air-whirls is set up most commonly by the inflow of a cold air mass at a relatively high level—6,000 to 15,000 feet—riding over a mass of warm air that hugs the ground. Such an extensive "temperature inversion" is an invitation to the two air masses to mix and overturn—and if the overturning is rapid enough, swirls of tornadic force are the result.

Science News Letter, March 10, 1934

R FOLLOWING DARWIN'S TRAIL IN SOUTH AMERICA

an address by

A Dr. W. H. Osgood

Curator of Zoology, Field Museum of Natural History

D Wednesday, March 14, at 4:30 p. m., Eastern Standard Time, over Stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

PHYSIOLOGY

Baby Rabbits Born Normally After Fertilizing in Glass

Harvard Physiologists Succeed with "Ectofertilization" And Development of Ova by Foster Mother

BABY RABBITS, developed from eggs that were fertilized outside the mother's body and brought to birth in the body of a second mother rabbit, have been produced in the Harvard University laboratory of general physiology by Prof. Gregory Pincus and E. V. Enzmann. These little rabbits, "fathered" in a glass flask by sperm extracted from a male rabbit, may be looked upon as the first actual approach to "ectogenesis," or "babies born in a bottle," about which scientists with a romantic bent, like J. B. S. Haldane, have been dreaming for years—though it is admittedly still a long way from realization for human beings.

Each of the two litters of "ectofertilized" rabbits which Prof. Pincus and Mr. Enzmann have succeeded in obtaining may in a sense be said to have had three fathers and two mothers, for in each case three male and two female rabbits were required for the process. In the strict biological sense, of course, the real mothers were the females that supplied the ova and the real fathers were the males that supplied the sperm; the others would rate more as auxiliary or foster parents.

To produce their "ectofertilized" rabbits, the Harvard scientists first mated a female rabbit with a male which had been rendered incapable of producing sex cells by a simple surgical operation. The mating act stimulated the first steps in the development of the ova, or female sex cells, which however, still remained unfertilized.

Then the ova were removed from the mother rabbit's body and placed in a suitable fluid in a glass vessel. Sperm from a normal male rabbit was added, and allowed to remain with the ova until each one had received the fertilizing male cell. Certain changes observable under the microscope indicated to the watchers that this process had taken place.

In the meantime, the "foster-mother" rabbit had been prepared for her role by being mated with another male in-

capable of producing functional sex cells. Into her maternal tissues, thus stimulated to activity, the ova of the other rabbit, fertilized in a glass vessel with the sperm of a male she had never seen, were introduced. They developed, and in due time the young rabbits were brought forth.

In order to have a check on the correctness of their technique and to make sure that the second mother rabbit's own ova were not chance-fertilized by stray sperm-cells, rabbits of different breeds were used throughout, so that the coat color of the young ones would indicate their actual parentage. This was in both cases indubitably traceable to the ova and sperm cells in the glass vessel. *(Turn Page)*

ANTHROPOLOGY

South Sea Wood May Reveal Life of Ancients

A NEW way of tracing the origin and early activities of Polynesian peoples is to be tried by Yale scientists.

The new attack on the problem will be an investigation of over 2,500 wood specimens from remote islands of the South Seas. By studying these samples of wood, and comparing them with old wooden implements used by Polynesians, the Yale School of Forestry hopes to learn more about where the islanders came from, and with what regions they had contact.

The collection of South Sea woods has been given to the School of Forestry by the Bernice P. Bishop Museum of Honolulu, and is intended for use in the systematic study of woods of the entire world now being sponsored by Yale in cooperation with the International Association of Wood Anatomists.

The Bishop Museum specimens are pronounced of exceptional value because nearly all were obtained by scientists on expeditions to remote localities in the Pacific.

Science News Letter, March 10, 1934