at any time a convection shower with a rather limited cloud canopy.

Nevertheless, conditions 1 and 4, above, are the same there as on land; hence even over the ocean the lunar bow is a comparatively rare phenomenon.

W. J. HUMPHREYS

U. S. WEATHER BUREAU,
WASHINGTON, D. C.

OBSERVATION OF A LUNAR RAINBOW BY FRANKLIN

WHILE reading Carl Van Doren's biography of Benjamin Franklin I was reminded of Professor A. K. Lobeck's report (SCIENCE, August 26, 1938) on his observation of a rainbow at night. In 1726, at the age of twenty Franklin kept a journal of his return trip from England to America. The *Berkshire* sailed into the Channel on August 5. Under the date of Tuesday, August 30, young Franklin recorded that "the moon being near full as she rose after eight o'clock, there appeared a rainbow in a western cloud, to windward of us." He also had the experience on this trip of witnessing an eclipse of the sun and an eclipse of the moon just fifteen days apart.

RAYMOND L. HIGHTOWER

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FREQUENCY OF LUNAR RAINBOWS

A RECENT note by Lobeck recognizes the fact that to most continental residents a lunar rainbow is a distinct novelty.[1] Lobeck also infers greater frequency of lunar rainbows in the trade wind belt, due to thunder squalls. However this may be, it is the purpose of this note to point out that both solar and lunar rainbows are relatively frequent in occurrence in the Hawaiian Islands, where most of the geographically variable rainfall is of orographic origin, *i.e.*, due to cooling of trade winds in passing over rugged island topography. Here, where local showers and mists occur sporadically on days and nights which are generally clear, are ideal conditions for rainbows, and persons in certain localities probably see rainbows almost daily at certain seasons. Any one who has occasion to travel about in upland districts ordinarily sees two or more rainbows a week. Near the full moon, lunar rainbows are often seen and certainly the matters of common knowledge to young and old in this part of the United States. In the solar rainbow, the secondary spectrum is visible more often than not, and the writer has a persistent impression of having seen the secondary spectrum in a lunar rainbow, but can not offer date or systematic observations.

CHESTER K. WENTWORTH

BOARD OF WATER SUPPLY,
HONOLULU

[1] A. K. Lobeck, SCIENCE, 88: 2278, 187, 1938.

MASTODON DISCOVERED IN OHIO

EARLY in September, 1938, a part of the skeleton of a mastodon (Americanus) was unearthed in a field by an Amish farmer, J. J. Miller, who was digging a drainage ditch. The remains consist of a thigh bone and eight teeth, the largest of which weighs a little more than 6 pounds. The remainder of the skeleton was so badly decomposed that it could not be recovered. About ten years ago, during the excavation of a drainage ditch on the same site, the skeleton was partially destroyed by dynamite. It interfered with the digging, and the farmer, not aware of the nature of the obstruction, used the explosive to remove it.

The plot of ground on which the bones were found is located on the extreme western end of the area known as "The Plains" in Berlin Township in Holmes County, Ohio, about two miles southwest of Benton and three miles northwest of Berlin. "The Plains" is already noted for the discovery of the skeleton of a giant sloth, Megalonyx (Jeffersoni), in 1890, on the farm of Abraham Druschell. This specimen, an excellent one, is mounted and stands in the Geological Museum in Orton Hall at Ohio State University.

The remains of the giant sloth were found embedded in shell marl, beneath six feet of black earth. The bones of the mastodon were found lying on top of the shell marl and three feet below the surface beneath black earth, high in humus content. Evidently, the area known as "The Plains" was at one time a glacial lake, which was destroyed by natural processes such as the lowering of the outlet and gradual filling-in by wash and plant and animal accumulations. When finally reduced to a bog, the sloth and mastodon were probably mired in and the skeletons preserved in the bog waters.

KARL VER STEEG

COLLEGE OF WOOSTER

FRESH-WATER MEDUSAE IN TENNESSEE

ON July 15 about a half dozen live *Craspedacusta ryderi* were brought into my office. These had been collected by Miss Sara Betty Fowler from Andrew Jackson Lake, privately owned, at the suggestion of Mr. Harry McCann, custodian.

The lake, about twelve miles west of Knoxville, has an area of from 50 to 65 acres with the greatest depth of from 20 to 30 feet. When we visited the lake on the afternoon of July 15 thousands of the medusae were found at and near the surface of the water. Something like 300 were collected in a short time over a small area. These were placed in an unaerated aquarium. By July 18 most of the specimens remained on the bottom of the aquarium or had disintegrated. Only a few swam irregularly about. Eleven of the more active specimens were preserved. It was found

when these were examined on September 6 that all the eleven were females.

According to Mr. McCann this is the third consecutive year that medusae have appeared in Andrew Jackson Lake. Each time they have lasted about 45 days, at the end of which time they more or less suddenly disappeared. This year they disappeared about August 3 or 4, according to Mr. McCann. None could be found when the lake was visited on August 14. As far as the writer knows, this is the first record of freshwater medusae in Tennessee.

EDWIN B. POWERS
UNIVERSITY OF TENNESSEE

HUNTING IN SOUTH AFRICA

MY attention has recently been drawn to more than one attempt, by advertisement and otherwise, to entice overseas sportsmen to the Union of South Africa with promises of facilities for big and small game hunting. These promises are couched in language that is unjustifiably optimistic, not to say misleading.

There is still much good hunting to be had in many parts of South Africa but mostly on privately owned farms, where in many cases game is carefully preserved. Speaking generally, game is to a great extent strictly protected by law throughout South Africa, particularly in the Transvaal, and permits for shooting certain species of game are only granted in those districts where those particular species are fairly numerous.

Roan antelope are being strictly protected everywhere. Only in special circumstances will permits be issued for shooting oribi, reed buck and sable antelope. Permits to shoot wildebeest, zebra, kudu, impala and waterbuck are only issued in those districts where these animals are sufficiently plentiful. Permits to shoot elephant, hippo, rhino and giraffe are not to be obtained. Even a farm of 10,000 acres well stocked with game might easily be deserted by game, other than birds, after a week or two of intensive shooting, and disappointment is bound to be the lot of many who come to South Africa on the strength of such promises.

Sportsmen who propose visiting South Africa in the hope of getting some big or small game hunting will be well advised to make the closest inquiries before concluding arrangements with persons offering hunting facilities. The Wild Life Protection Society of South Africa is prepared to give advice on game to any one who desires to visit the Union of South Africa on a shooting trip.

J. W. H. WILSON

THE STRUCTURE OF THE INSULIN MOLECULE

IN the article entitled "The Structure of the Insulin Molecule" in the issue of SCIENCE for August 12, two corrections should be made. There should be substituted for "with six slits whose centers give an octahedron," the following: "which by parallel displacement of faces through $\pm a/2$ becomes an octahedron with the same distance between parallel faces and consequently." On page 149, line 16, first column, 66° should be substituted for 6°.

D. M. WRINCH

ABSTRACTS OF PAPERS READ AT THE AUTUMN GENERAL MEETING OF THE AMERICAN PHILOSOPHICAL SOCIETY

AT the autumn general meeting of the American Philosophical Society held in the hall of the society on Independence Square, Philadelphia, on November 18 and 19, the following papers were presented:

Agriculture and current population trends: CONRAD TAEUBER. Reproduction rates in the farm population indicate an excess of approximately two thirds above replacement needs per generation, but rates of reproduction for the non-farm population are not now sufficient for permanent maintenance of present numbers. Within the farm population there is wide variation, rates of reproduction in the native white group ranging from 1.00 in Connecticut to 2.11 in Utah and rates among Negroes ranging from 1.47 in Arkansas to 2.14 in North Carolina. In general, rates are higher in the South than in the North and West; among Negroes and other colored groups than among whites, and among foreign than among native stocks. There is an inverse relationship between level of living and population fertility ratios. While no single factor serves to account for the differentials in the rates of reproduction within the farm population, significance attaches to the nature of the prevailing agriculture. The population engaged in a rationalized, commercial agriculture tends to have lower rates of reproduction and is less elastic for population growth than that engaged in a less commercialized, more nearly self-sufficient agriculture. This relationship is especially clear in areas with approximately the same plane of living; rates of reproduction in the Southern Appalachians tend to exceed those in the Cotton Belt. Changes in farm population between 1930 and 1935 illustrate the same principle. Some of the areas where commercial agriculture is dominant lost population throughout that period, whereas areas with less highly commercialized agriculture more frequently retained their own natural increase and received migrants from non-farm areas.

The social environment as a factor in population