

## Astronomers Ready for Eclipse—Continued



AT A COLDER ECLIPSE. Prof. Heber D. Curtis, of the Allegheny Observatory, Pittsburgh (left) and Prof. John A. Müller, of Swarthmore College, Pa., at the eclipse of Jan. 24, 1925, which they observed from New Haven, Connecticut, with the temperature around zero. The two astronomers are again together for an eclipse in a somewhat warmer clime.

full moon, and about a millionth as bright as the sun itself. Ordinarily, the glare of the sun in the surrounding atmosphere makes it invisible.

At the station of the Naval Observatory, on the Philippine Railway grounds at Iloilo, several important observations will be made. With a camera 65 feet long, photographs will be made of the inner layer of the corona. In Sumatra, Prof. J. A. Müller, of Swarthmore, will make similar photographs with an identical camera. The shadow of the moon sweeps across his station about an hour before it reaches Iloilo, so that comparison of the two pictures should reveal how rapidly the material in the corona is moving.

It is known that the corona consists mostly of scattered sunlight, scattered partly by fine particles, or dust, and partly by the molecules of gas. But nobody knows just how fast it is moving. Obviously it is moving, for eclipses at different times have coronas of greatly different shapes. When an eclipse occurs at the time of a large number of sunspots, a condition occurring every eleven years, the corona is nearly circular, extending out an equal distance on all sides of the sun. At the time of few or no sunspots, the corona shows long streamers extending out from the

equator of the sun. The sunspot maximum came last year, and the sunspots are now definitely on the decline. Probably the corona will be nearly the same as that of the 1918 eclipse, for in that year also the sunspot maximum had gone by just a year before.

Another way of telling of the constitution of the corona is with the spectrograph, which analyses the light. Prof. Heber D. Curtis, of the Allegheny Observatory, who is with Prof. Müller, will make such spectrum photographs of the corona. He is not using the ordinary kind of spectrograph, however, but one which makes use of the interference of light and gives extremely accurate measurements of the speed of the moving material in the corona.

Within the corona, the outer part of the sun as we see it, is the chromosphere, a layer of glowing gases. Ordinarily, this makes itself evident only by absorbing part of the light from the inner parts of the sun, and causing the dark lines in the color spectrum. At the time of an eclipse, just before and just after the moon completely covers the sun, this layer shines by its own light. Its spectrum then is a series of bright, colored arcs of light, and by their measurement on the photographs it is possible to meas- (Turn to next page)

## Prehistory Young Science

*Archæology*

The science of determining what went on in the world before men started the writing of history is just ninety-nine years old, Dr. George Grant MacCurdy, of Yale University, reminded the American Philosophical Society at its Philadelphia session.

The zero milestone of the science of prehistory was set by C. J. Thomsen of Copenhagen in 1830 when he established a system of chronology for prehistoric ages based on the development of human industry in stone, iron, and bronze.

The years 1857 to 1861 were important ones. The discovery of primitive human bones at Neandertal, Germany, was announced in 1857. The following year came the joint communication of Darwin and Wallace regarding the perpetuation of varieties and species by means of natural selection. In 1859 Darwin's "Origin of Species" was published. The same year scientists agreed that the crudely chipped stones found along the valley terraces of the Somme River must have been made by men of remote antiquity, and soon after that came the realization that a reindeer bone with pictures of wounded animals cut into it was really a specimen of the art of ancient men.

"Before the science of prehistory could be developed it had to await the prior development of geography and geology as well as comparative anatomy," Dr. MacCurdy stated. "It was a bit of great good fortune that the discovery of the human bones at Neandertal did not take place during the Middle Ages."

One of the big problems of prehistory is to gain an increase of knowledge regarding ancient man in Asia and Africa in order that Old-World prehistory as a whole may be correlated, Dr. MacCurdy stated. To this end, he said, the American School of Prehistoric Research has obtained permits and is already exploring and excavating jointly with the British in Iraq and Palestine. Another great problem is the correlation of human remains with the various phases of the Ice Age.

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Twenty-five years ago, the first flight in a heavier-than-air machine lasted 59 seconds.

Alaska has a herd of galyaks, which are hybrids of galloway cattle and the Tibetan yak.