ASTRONOMY

French Astronomer Observes Sun's Corona Without Eclipse

Photography Not Possible But Form May Be Traced When Observations Are Made in Clear Air on Mountains

A PROBLEM that has long engaged the attention of astronomers, that of observing the sun's corona without waiting for a rare total solar eclipse, has been partially solved by B. Lyot, an astronomer at the Meudon Observatory near Paris, France. He has reported to the Academy of Sciences how the form of the corona may be traced by the use of polarized light, provided the air is sufficiently clear. He made his observations from the 9,439-foot high summit of the Pic du Midi, which was the first mountain to be used by astronomers for an observatory. However, this method does not permit actual photographs of the corona. To obtain these, astronomers must still wait until the dark disc of the moon covers the sun.

Ordinary light is made of waves vibrating in many directions, but when polarized the vibrations are mainly in one particular direction. Light may be polarized artificially by the use of special prisms, but it sometimes occurs in nature when sunlight is reflected from a cloud of small particles. The corona consists largely of such particles, so its light is largely polarized, a fact that has often been verified at eclipses.

M. Lyot's apparatus consists principally of a very sensitive polarimeter, than can detect one part of polarized light in a thousand times as much ordinary light. With a telescope lens he obtained an image of the sun, and screened the bright inner part with a metal disc the same size as the image. The glare thus eliminated, he was able actually to see directly the solar prominences, great flames of hydrogen and other gases that shoot out from the sun's surface. These also were first observed at eclipses. For many years it has been possible to observe them at other times with the aid of a spectroscope, but this is probably the first time that they have been observed directly.

With the polarimeter set a little way from the edge of the sun, about a fifth of its diameter, no polarization of the light was observed, but as the instrument was moved inward it began, and increased as the edge was approached. M. Lyot believes he has shown conclusively that this is not due to any effect in the atmosphere, because very light clouds completely eliminated the effect. He made a series of observations by crossing the sun at different angles, and was thus able to plot the outline of the corona in all directions. As photographs of the corona at eclipse time often show streamers extending many times the diameter of the sun, he has probably only recorded the inner corona, which is much brighter than the outer portions. Therefore, astronomers will still find it necessary to travel long distances to observe a total eclipse. As a full check on M. Lyot's researches, it will be desirable to observe the corona by his method at the same time that a total eclipse is being observed elsewhere. In commenting on his work, Dr. Henri Deslandres, director of the Paris Observatory, of which the institution at Meudon is a branch, suggests that it may be possible to photograph the corona without an eclipse with the assistance of the spectroscope from a suitably clear station.

The Pic du Midi, scene of M. Lyot's labors, was the first mountain observatory. Francois de Plantade, who was born at Montpellier in 1670, and was a colleague of the great French astronomer, G. D. Cassini, was the first to propose an observatory on the Pic du Midi in order to take advantage of the clear sky. He made several ascents to study conditions and died there in 1741 while making such observations. His work was the forerunner of the modern American observatories in California on Mt. Wilson and Mt. Hamilton.

Dr. George Ellery Hale, honorary director of the Mt. Wilson Observatory, in 1893 made some of the first attempts to photograph the corona from a mountain top without waiting for an eclipse. These experiments were made from Pike's Peak, but were unsuccessfull. It has been tried again in recent years, notably by Dr. W. H. Steavenson, a famous English astronomer, who conducted experiments in Switzerland in 1927, but these also were inconclusive. M. Lyot's method is based on a different principle from these, however, and it will be of great value if its accuracy is confirmed.

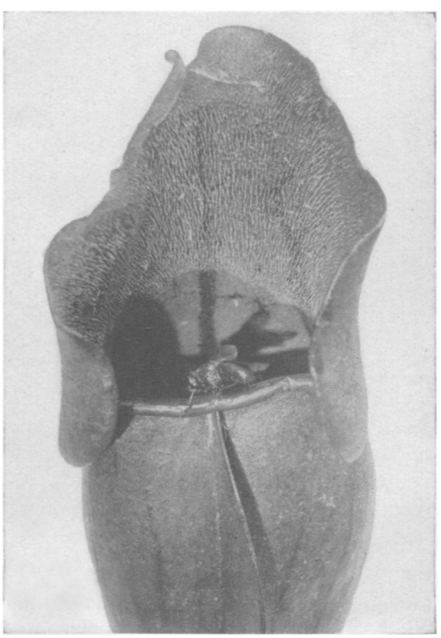
Science News Letter, February 28, 1931

ZOOLOGY

Fish-Catching Spider Found In Georgia

A FISH-CATCHING spider from Georgia is reported by Dr. E. W. Gudger of the American Museum of Natural History. It was captured by E. A. Fuchs of Atlanta, who found it in the act of dragging a violently resisting little minnow up on a leaf floating on the water. Dr. Gudger gives full details of this fish-eating spider, together with records of a number of similar cases, in the current issue of *Natural History.*

Science News Letter, February 28, 1931



WALK INTO MY PARLOR?

The descent into Hell, according to Virgil, is easy. So is the way easy for heedless insects, into the deadly throat of the pitcher-plant's hollow leaf, on which Cornelia Clarke has caught a guileless fly making its first and fatal misstep. Below him is the zone of downward-pointing bristles, and below that the wax-smooth wall sheer to the water in the death-pit, whence no victim ever escapes. What becomes of the drowned and disintegrating insects in the pitcher-plant's leaves? It used to be taken for granted that they were digested and absorbed by the plant; later testimony has not been so unequivocal.