

phenomenon from the sub-stratosphere with ultraviolet lens systems, spectroscopes and polarizing screens.

Another comment on the discovery came from Dr. Donald H. Menzel, Harvard's authority on solar phenomena and leader of the Harvard-Massachusetts Institute of Technology expedition to Siberia last year. Major Stevens' discovery, he said, is "of great importance and will have an immediate bearing on the interpretation of the structure of the sun's upper atmosphere."

Guided by Major Stevens' discovery, Dr. Menzel has re-examined plates taken by Harvard last year, and has found the globular coronal blanket recorded on some of them, although, because of the brighter sky background, they showed not nearly as clearly as on the photographs taken in the sub-stratosphere. Two European astronomers, Bergstrand and von Klueber, had obtained previous indications of the globular form of the corona, but a complete appreciation of its nature was not reached until Major Stevens' pictures were studied.

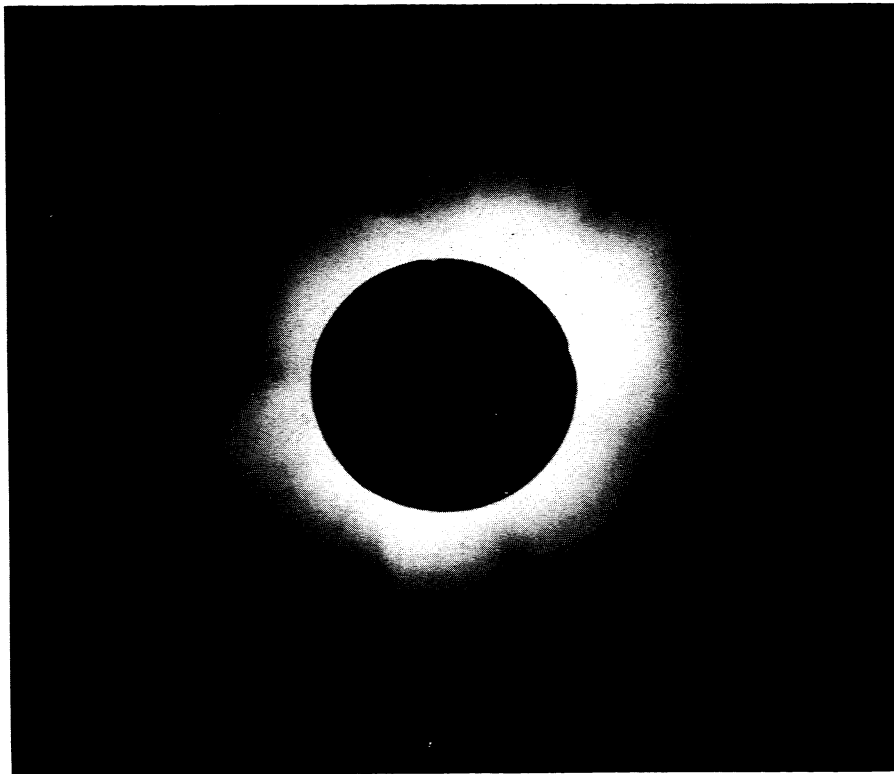
No Optical Defect

Rigid tests by Drs. Kenneth Mees and Walter Clark of the Eastman Kodak Laboratory, and by Dr. Brian O'Brien of the Institute of Optics of the University of Rochester, were made to investigate the possibility that the unusual appearance of the corona on Major Stevens' plates was caused by optical or photographic defects, or by minute ice particles in the stratosphere. Fifty scientists from a dozen American observatories accepted the results of these tests as conclusive evidence that a natural phenomenon had been photographed.

In reporting the discovery, Dr. Shapley pointed out that two of the most significant observations of this year's eclipse were made by amateur astronomers. Major Stevens, although an expert in stratospheric flight and aerial photography, is not a professional astronomer, while the best coronal photographs ever made in polarized light were snapped by an amateur astronomer, Fernando de Romana, of Arequipa, Peru.

Major Stevens' pictures were taken near Lima, in a Pan-American Grace Airways plane, piloted by Capt. Charles Disher and co-pilot W. E. Gray. W. O. Runcie, Lima photographer, assisted in the difficult task of making the pictures. They include 11 photographs with a 24-inch camera, four with an 8¼-inch camera and 150 feet of motion picture film made with a 6-inch lens.

Science News Letter, August 21, 1937



USUAL PRINTING

In this print made by the customary method of shining light through the negative, the delicate detail of the globular corona is largely lost. This is Major Stevens' photograph taken during June 8th eclipse at an altitude of 25,000 feet. See illustration on next page.

ANIMAL PSYCHOLOGY

Bass Taught to Distinguish Between Colors in Research

WHEN you select a fly with a dash of red, or trail a plug or spinner gaudy with yellow, you have good scientific warrant for the use of bright colors in luring your fish. Experiments supporting this conclusion are described in a new publication of the Illinois Natural History Survey.

The experiments, performed by Dr. Frank A. Brown, Jr., indicate that large-mouth black bass "are able to distinguish among colors in about the same manner as would a human being with perfectly normal color vision, looking through a yellowish filter."

A system of rewards and punishments was used to train fingerling bass to distinguish between colors and various shades of gray. Individual fish were kept in pans of water and rewarded with a water flea or a mosquito wiggler when they approached the proper color, or

punished with a light electric shock when they came near any other color or shade of gray. Medicine droppers covered with adhesive tape of the different colors and shades were always shown the fish at the same place in the pan. Fourteen thousand tests of trained bass were made.

Large-mouth black bass are alert, active and lend themselves readily to laboratory experiments. Five to ten training trials are sufficient to teach them to discriminate between red, yellow, green and blue. When the difference in color is small the training must be longer. Memory for certain colors lasts for weeks, perhaps months. Fish trained to come to rose red can distinguish unaccustomed shades and tints and combinations of red from black, white and all intermediate grays. Yellow and green are also recognized as colors but less certainly.

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