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SUN ECLIPSE OBSERVATIONS PLANNED FROM NAVY DIRIGIBLE

When the moon eclipses the sun and throws a great shadow upon part of northeastern United States next January 24, the Navy's great dirigible, the Los Angeles, will be used to secure scientific data on this important event.

Carrying a staff of astronomers and their scientific instruments high above any clouds that may be in the sky and far out to sea so as to lengthen the time of totality, the helium filled craft is expected to serve science effectively in recording this important event.

The Bureau of Naval Aeronautics, of which Admiral W. A. Moffett is chief, and the U. S. Naval Observatory, of which Capt. Edwin T. Pollock is superintendent, are making plans for the use of the airship at the time of the eclipse. In a communication addressed to prominent astronomers throughout the country who are planning to observe the coming eclipse from the ground, Capt. Pollock has asked their advice on the kind of observations that can best be made from the air.

"Observations from the air have the advantages over those from the ground of less interference from clouds, and of avoidance of the strong absorption of the lower strata of the air," he states. "The latter advantage would be particularly favorable at an eclipse like the one of 1925 when the sun will be at a very low altitude. By going out over the ocean, the additional advantages of longer duration and of greater altitude of the sun could be secured. An airship offers several advantages over an airplane, as for example, a larger and steadier platform for instruments, and accommodation for professional astronomers."

Although observations requiring precise adjustment of instruments and long photograph exposures will not be possible from the airship, the program already planned includes determination of exact times of contact of moon and sun, photographs by a half dozen cameras, motion pictures of corona and disappsaring and reappearing crescent, observations of the shadow bands, determination of the color and visibility of the corona, color effects and changes in the atmosphere, visibility of the stars and searches for comets and planets. Colored motion pictures of the highly colored streamers shooting out from the sun during totality will be attempted for the first time in history. It is hoped that these observations will be of value to the study of sunspots and the resulting magnetic disturbances on the earth which affect telegraph and cable communication and probably have some affect on radio communication. The airship will be kept in touch with ground observers by radio and U.S. Naval Observatory time signals will be received in the same way.

Prof. S. A. Mitchell, of the University of Virginia, and chairman of the eclipse committee of the American Astronomical Society and observer at five previous eclipses, has approved of the plan of using the dirigibles as observatories. Prof. Ernest W. Brown of Yale University, authority on the moon which will cause the eclipse

points out that aerial photographs of the edge of the shadow cast by the moon will help materially in determining whether the moon arrives at the times predicted by the astronomers.

The possibility of eclipse observations from the air was pointed out before the California eclipse of last year by Col. John Millis, U.S.A., retired, and airplanes of the Navy and the Army were in the air during that event. Clouds and the speedy movement of the airplanes prevented results of scientific value being secured then but use of lighter-than-air craft.is expected to bring better results.

The fact that this event will occur in the morning at about 9 o'clock and the desirability of reaching as high an altitude as possible has also resulted in a decision to reduce the crew of the airship to a minimum andlimit the number of astronomers to be carried aloft.

The buoyancy of the dirigible will be decreased by the low temperature of early morning and the lack of sunshine. The great cigar-shaped ship will steal out of its giant hangar at Lakehurst before daylight on the morning of the eclipse in order that it may climb high above any clouds that might obscure the eclipse and station itself some distance out to sea where the time of total eclipse is longer. It is probable that only six or seven scientific observers, under Capt. Pollock's direction, will be accommodated.

"ROTOR" SHIP OPERATES ON BASEBALL PRINCIPLE

A 70-year old scientific principle, easily understood by anyone who knows anything about baseball, is the trick that underlies the new "Rotor" ship invented by Anton Flettner, according to German engineers and scientists who have examined the sensation-causing craft. The smooth surfaces of the great cylindrical "rotors", spinning in the wind, increase pressure on one side and decrease it on the other, just as the surface of the rapidly rotating baseball piles up a difference of pressure on its two sides and causes it to drift into a curve.

That, say the scientists, is all there is to it. The persistant stories of a "windmill ship", whose towers are somehow turned by the air currents, or which contain inside their smooth walls paddlewheels that are so turned, and which drive underwater propellers, are all imaginative and incorrect attempts to explain a very simple thing that looks mysterious just because it is unfamiliar in its present application.

The two tall, cylindrical objects that look like immense smokestacks, are the only propellers the ship needs. They are spun on their axes by small electric motors-- 20 horse power is all the present ship employs. As they spin, they tend to carry a layer of air around with them. In calm weather, this air would simply keep rotating about with the rotors, and mothing would happen. But when a wind is blowing, which would split and flow equally on both sides of the rotors if they were stationary, more of the air is turned with the direction of rotation than against it. That is, the wind is split unequally. The part that travels along with the surface of the rotor blows faster, momentarily, than the part that travels against the direction of motion of the other side. The wind that has its motion slowed down naturally tends to pile up pressure at the point where the slowing occurs, while the wind that is helped to flow faster tends to lower pressure at the point where the "boost" is given. When the wind is blowing across the ship, the rotors are revolved in such a direction that the pressure will be built up behind them and lowered in front, so that the craft moves forward.