

ASTRONOMY

Gather for Sun Eclipse

Total solar eclipse scheduled for Feb. 25 sends many astronomers from all over the world to the Anglo-Egyptian Sudan. Wide variety of observations will be made.

► THE TOTAL eclipse of the sun to occur on Feb. 25 is bringing some of the world's top-flight astronomers to the tropical city of Khartoum in the Anglo-Egyptian Sudan.

Already astronomers from the United States, Canada, England, France, the Netherlands, Italy and Egypt are setting up their telescopes and other apparatus for observing the solar eclipse. Equipment has been reaching the Sudan since before Christmas. A few scientists arrived in November to select favorable sites for viewing the eclipse.

Telescopes, radio telescopes and a wide variety of other equipment, including some specially designed for use during this eclipse, will be turned on the sun's outer envelope when the moon comes between the sun and the earth. Totality will last about three minutes.

The composition and temperature of the sun, behavior of sky light during a total eclipse, possibilities of a "daylight aurora," and fluctuations in the earth's magnetic field at low intensities all will be studied. Maps may be made more accurately because of observations made at this eclipse. Einstein's theory of relativity may be rechecked by calculating how much light from distant stars is bent as the light rays pass near the eclipsed sun.

Such a wide variety of observations are being conducted that astronomers at Khartoum are holding a series of evening meetings at which the work of the various expeditions is described and discussed. At the first session, observations through use of radio techniques were described by Dr. J. P. Hagen of the U. S. Naval Research Laboratory and Dr. M. Laffineur, leader of the expedition from Paris' Astrophysical Institute.

Because of the favorable location of Khartoum, famous for its clear skies, practically all groups are working in this area. An exception is the joint expedition from the Royal Observatories at Greenwich, England, and Helwan, Egypt, which is operating at Tendelti and En Nahud. The University of Ottawa expedition has already set up an observation station at Musmar.

The various departments of the Sudan Government, the Army and the Royal Air Force are collaborating in giving the expeditions all possible assistance and facilities. Under a special agreement with the director of customs, all scientific apparatus and personal equipment is being admitted to the Sudan free of duty. Astronomers

can ride Sudan railways and steamers for half-fare.

All available photographic dark-rooms in Khartoum are being placed at the disposal of expedition members. Huts will serve as dark-rooms for members of the Greenwich-Helwan expedition.

The path of totality passes diagonally from southwest to northeast across the Sudan. At Khartoum the path is over 80 miles wide. The sun will be obscured at about 11 o'clock, so it will be almost directly overhead. Even though totality will last only about three minutes (a few eclipses have lasted as long as seven minutes), some 50 astronomers have gathered for the event.

The city of Khartoum is really an oasis in the middle of the desert, despite the fact it is located on the banks of the Nile River, at the confluence of the Blue and White Niles. This city was chosen because of its favorable position in the eclipse path and its virtual absence of rainfall.

Over 20 astronomers and technicians from the United States have already reached the Sudan. A group headed by Dr. J. W.

Evans of the High Altitude Observatory of Boulder, Colo., will correlate its observations with those of the U. S. Naval Research Laboratory, working under the direction of Dr. Edward O. Hulburt. The Aeronautical Chart and Information Service of the U. S. Air Force, with Col. P. C. Schauer in charge, will work with the Rev. Francis J. Heyden, S. J., director of Georgetown University Observatory. The National Geographic Society and Yerkes Observatory expedition is led by Dr. G. Van Biesbroeck.

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INVENTION

Floatable Breakwater For Off-Shore Protection

► A FLOATABLE breakwater, designed to protect off-shore oil wells and other installations from sea waves has been invented by Paul L. Guarin, Houston, and assigned to the Shell Development Co., San Francisco. It received patent number 2,584,867. His breakwater is made up of a number of readily portable units chained together which can be anchored to the bottom and which will extend from the bottom to the sea surface.

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BIOLOGY

Biologists Make Grouse Dizzy to Catch Them

► IT SOUNDS dizzy, but biologists in North Dakota go out armed only with a flashlight and a knowledge of how to make a bird dizzy to catch ruffed grouse for replanting purposes.

It's as simple as this: During the winter months the biologists tramp at night in likely territory until they flush a bird; it flies to a tree. Focusing a strong, blinding beam of light on the grouse, the field biologist rocks the tree back and forth until the bird becomes dizzy and falls to the ground. Then a fish landing net is quickly thrown over the stunned bird and another grouse is available for re-stocking.

After experimenting in several methods of securing live grouse, Field Biologist Wilford L. Miller of the North Dakota Game and Fish Department devised this unique and almost incredible technique.

"Some wildlife men pooh-pooh our method of capturing live grouse," Mr. Miller states, "but it has proved successful for us and was used during January and February, 1951. We are continuing it this winter."

The dizzy grouse project was conducted in the Turtle Mountain region of north-central North Dakota, near Bottineau. The valuable upland game birds were then transplanted to the Killdeer Mountain area in the western part of the state.

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DIZZY GROUSE — *Biologists in North Dakota are now hunting ruffed grouse for restocking purposes with a flashlight. Here one of the birds is shown just before being rocked back and forth in the tree until it falls to the ground dizzy.*