

ASTRONOMY

Hear Star's Twinkle Now

Astronomer's device makes it possible actually to hear the noisy twinkling of the stars. Developed as part of quantitative study of scintillation.

*"Twinkle, twinkle little star,
Now I hear you move up thar."*

► ASTRONOMERS around Washington might well be singing this version of the old rhyme. They actually heard the stars twinkle when Dr. John S. Hall of the U. S. Naval Observatory played for members of the American Association of Variable Star Observers a record of the noisy twinkling of stars.

Stars appear to twinkle because the light from them constantly changes in intensity due to irregularities of the atmosphere through which it passes. When this light is converted into electricity by means of a photocell, a low crackling or hissing noise is produced as the electrical current changes in intensity.

"Man has observed the scintillation of stars since ancient times," Dr. Hall told those attending the meeting at Georgetown University.

"Aristotle noticed that the fixed stars seemed to scintillate and the planets did not. Aristotle was wrong. The planets do twinkle, but not as conspicuously as do the stars.

"Ptolemy noticed that stars near the horizon scintillated more strongly than those overhead. Kepler was evidently the first to spot changes in color due to scintillation, and compared stars to diamonds," Dr. Hall pointed out.

Just before and just after an eclipse, dark bands may be seen fleeting across snow or a white wall much as ripples on quiet shallow water move across a sandy bottom. Dubbed "flying shadows," they are shadows of waves in the earth's atmosphere, made visible by the narrow crescent of light from the sun.

Those ghostly shadows may be two to four inches wide, several times that long, and move rapidly. The dark bands can also be seen within a few seconds of sunrise or sunset, or when the sun is partially hidden by mountains.

With the aid of a telescope, these same shadow bands can be seen by starlight. Stellar images produced by the telescope move about because of the same disturbances in the earth's atmosphere that produce the shadows.

Stars sometimes wander as much as seven seconds of arc. It is these changes of position that make it difficult to observe planets in detail. At the focus of a telescope one part of a planet moves with respect to a

part close to it, and tends to blur the image.

Movies of these shadow bands, believed to be the first ever shown, were exhibited at the meeting. The dark shadows appeared to be traveling across the telescope's lens. The photographs were made by Arthur A. Hoag as part of a quantitative study of scintillation being carried on at the Naval Observatory by Dr. Hall, Mr. Hoag and Alfred H. Mikesell.

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METEOROLOGY

Oil Wells in Gulf Get Improved Storm Warnings

► WORKERS on huge oil wells far out in the Gulf of Mexico now can get adequate warnings of approaching hurricanes, so they can leave for shore in time.

Warnings are prepared through the combined use of weather forecasting, oceanography and applied climatology. The result is that the oil well operators get an

estimate of the amount of time it will take for the huge ocean swells which precede a hurricane to reach their wells.

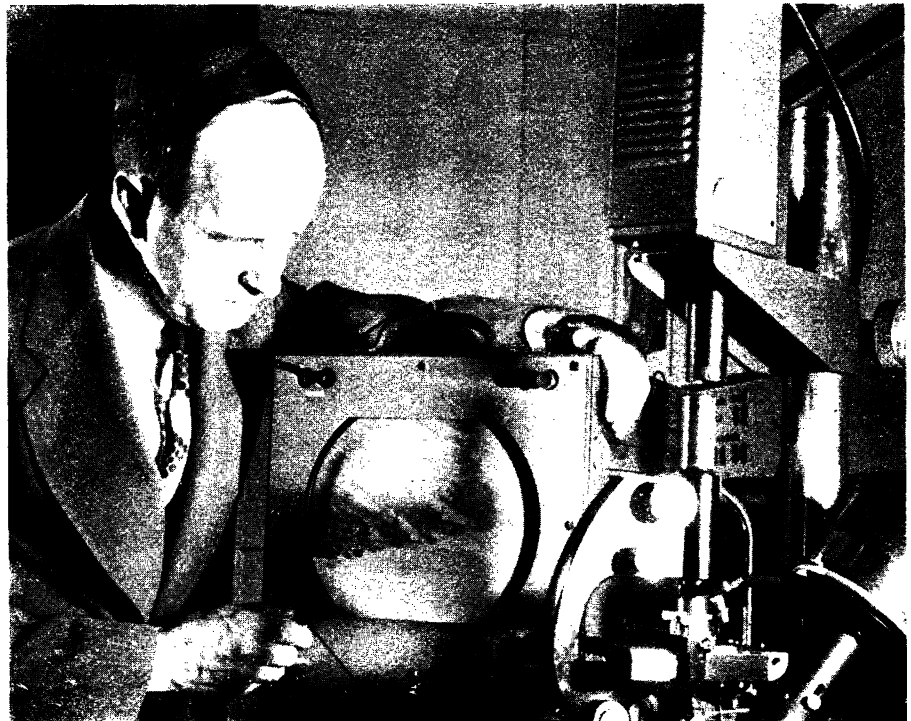
Almost as important as safe evacuation of the men is the need to secure the complex drilling equipment. The job takes 36 to 48 hours.

In one evacuation process, the operators had to remove 6,000 feet of drill pipe from the hole and stack it, in 30-foot lengths, on the oil well platform. This was in addition to the many other tasks involved in insuring the least possible damage to the installation from the approaching hurricane.

The general hurricane forecasts of the U. S. Weather Bureau were not adequate for the purpose, according to Karl Shisler, of an industrial meteorological firm which devised the new method. Mr. Shisler reports it to the American Meteorological Society.

The limiting wave and wind conditions above which it would be impossible to evacuate the workers in small boats were determined. Then specified assumptions as to the rate and direction of movement of both the hurricane and the preceding swells were made. These assumptions were based on Weather Bureau records of hurricanes of the past 44 years. Finally, time lines were plotted on maps of the Gulf of Mexico, the Caribbean and the Atlantic. Thus, once the position and direction of a hurricane was known, it was possible to estimate how long an oil well crew had to evacuate.

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TELEVISION STARS— Wiggling microscopic insects and slides of animal tissue are the star performers on this set, a television microscope designed by RCA Laboratories, being adjusted by Leslie Flory. (See SNL Jan. 20.)