second. To facilitate reading when the direction is very variable this instrument should have two time-scales, one of about 10 mm and one of 40 to 60 mm an hour, the former for use during the period before the eclipse when the local characteristics of the station are determined, and the latter only during the eclipse. If recording instruments are not available an Assmann ventilated psychrometer can be submitted for the thermograph, a wide-scale aneroid for the barograph, and the direction of the wind can be determined from observations of a vane reflected in a nephoscope, as was done during the eclipse of 1918; but, to allow for errors and accidental variations, observations must be made very frequently—every two or three minutes if possible—and a full program will require at least two, and preferably three observers, one of whom should give his entire time to clouds, which have received little attention heretofore.

Concerning exposures of instruments, stations should be placed where there are no hills, trees, buildings, etc., likely to obstruct or deflect the normal wind in any direction; obviously, the more first-class stations, well-distributed, the better. Since temperatures in closed shelters lag appreciably, particularly during calms, a small, open shed having a double roof and suitable boards on three sides to exclude direct sunlight and heat radiated or reflected from surrounding objects, will be best for the thermometers and can easily be improvised from inexpensive materials. It should be erected over grass in an open space freely exposed to the wind.

To summarize, adequate observations and records during solar eclipses are no more difficult to secure than are data of uncertain quality and do not necessarily require elaborate or very costly apparatus; the chief requisites are instruments with wide scales permitting frequent readings, proper exposures and care, information concerning which is available in recent pupblications.

The meteorology of solar eclipses may not be of the highest importance, but, viewing a program of study simply as an experiment or an exercise in the measurement of very small quantities, the results of which may have an incidental value in astronomy or physics, it is believed that the small effort required is worth while.

Washington, D. C.,
12th August, 1925.

Cause of Shadow Bands

Plates exposed here (Middletown, Conn.) during the period of shadow bands in the total eclipse of the sun have been developed at Wesleyan University and prove beyond any doubt, it is said, that the bands were caused by irregularities in the density of the atmosphere. This is the theory that has been held for years, but is the first time that it has been proved by actual photographs. The plates were forwarded by Dr. A. E. Douglass, director of the Steward Observatory at Tucson, Ariz., who designed the camera. The conditions under which the photographs were taken were perfect. Dr. Douglass says that the same effects witnessed

during the period of shadow bands can be seen from distant electric lights or on stars viewed with a powerful telescope.—*Boston Evening Transcript*, May 2, 1925.

The shadow bands, rippling alternations of light and shade that chase over the landscape just before and after total solar eclipses, are due to disturbances in the atmosphere, according to Dr. Charles Clayton Wylie of the State University of Iowa.

These phenomena, which have long been a puzzle to astronomers, were especially pronounced during the most recent of total eclipses, which darkened the populous northeastern part of the United States last January. Dr. Wylie states that this fits in well with his theory, inasmuch as the atmosphere above cities is much disturbed, especially in winter, by rising currents of warm air.

Dr. Wylie has tested his theory on a small scale, with the image of a bright star in a darkened room. "If the light from a star such as Sirius is allowed to fall on a white surface in a room otherwise dark," he said, "a person of keen eyesight may see a pattern of light and dark mottlings, because the source of light is a point. Ordinarily in sunlight these mottlings are not seen, because the patterns overlap, but at the time of an eclipse, just before and just after the moon covers the sun, a narrow sliver of light remains, which is practically a line, and so the overlapping is in one direction only, and the effect may resemble the stripes in a flag." —James Stokley, of *Science Service*, Sept. 11, 1925.

DROUGHT AND HEAT IN THE SOUTHEAST

Weather history has been made "with a vengeance" in the southeastern states during the past crop season. Persistent low rainfalls and high temperatures for months blighted the crops and pastures. "Many localities had ten, fifteen, or even twenty inches less rainfall than usual. In Georgia, crop losses were particularly widespread. At Nashville, Tennessee, many wells went dry for the first time, the river was the lowest on record, and the use of water in the city had to be restricted. Montgomery, Alabama, and Norfolk, Virginia, experienced the driest August in the fifty-three years of record." (*Why the Weather?* No. 773, from *Weekly Weather and Crop Bulletin*, Oct. 6, 1925). The drought began in February and lasted into October. A few contributions received from different parts of the drought stricken area give samples of the extraordinary meteorological situation.

South Carolina

(Excerpts from article by RICHARD H. SULLIVAN, in *The State*, Columbia, S. C., Sept. 7, 1925.)

"The present drought is the most widespread, most severe and most disastrous in the history of this state, as far as climatological records are available. . . .

". . . A tentative computation for August, developed from reports of 25 selected stations, shows an average of 1.78 inches, or 4.22 inches below normal, and the lowest August state average of record. By districts . . . the total average precipitation for the five principal crop-growing months, is as follows: The coastal plain, 16.46 inches as against a normal of 23.76 inches; upper coastal plain and lower Piedmont, 14.10 inches as against a normal of 19.80 inches, and the Piedmont, 13.85 inches as against a normal of 21.65 inches. These data show a shortage