his salt remains a student, constantly questions the ever residual unknown, and attempts to elicit the answer from reluctant nature. I know you will continue to encourage him here through an adequate competence and more important still through opportunity to follow his destiny to the limit of his capacity. He may wander into fields that appear remote from present concern, but it is certain that in such wandering and exploration lies future knowledge and the practical accomplishment of to-morrow.

THE SOLAR ECLIPSE

THE LICK OBSERVATORY-CROCKER ECLIPSE EXPEDITION TO FRYEBURG, MAINE

THE assembling and adjustment of instruments to be used in observations of the total eclipse of the sun on August 31, 1932, by members of the Lick Observatory-Crocker Eclipse Expedition to Fryeburg, Maine, have been completed, and the entire equipment, weighing approximately four tons, boxed and shipped to the station. The shipment reached Fryeburg early in August, and the members of the expedition will be very busy there for the four weeks to follow in erecting the instruments, making final tests of all adjustments and rehearsing the program to be carried out in the critical 99 seconds during which the moon cuts off completely the light from the sun's photosphere.

This program includes both photographic and spectrographic observations. To photograph the corona, three telescopes will be set up. Two of these have Ross lenses of five inches aperture and 15 feet focal length and are provided with magazine plate holders to permit making the exposures in quick succession. The third has a Ross lens of four inches aperture and five feet focal length. This will be used to secure photographs of the corona in light of four distinct colors, violet, yellow, red and infra-red.

Four spectrographs are provided for the study of the flash spectrum of the sun. Two of these, fixed in position, will receive light from a coelostat mirror and will make continuous records of the flash spectrum from the point of appearance of the lines of lowest level to the point of disappearance of those of highest level. This is accomplished by having the plates move at a uniform rate in the focal plane of the instruments, which are therefore commonly designated as moving-plate spectrographs. One of these will record the spectrum from the K line to $\lambda 4700$, with a dispersion of 3.5 Angstrom units to the millimeter, the other, the spectrum from $H\beta$ to $H\alpha$ (dispersion, 7.5 A. per mm). Two other spectrographs, mounted on a polar axis and pointed directly toward the sun, are of the slitless type and will record on fixed plates the crescent-shaped lines, as they are usually observed. Both are equipped with magnetic shutters operated by clock-work, and special plate holders to permit obtaining exposures on moving-picture film at the rate of one every other second. One of these, equipped with a Michelson grating and a Ross camera lens of five-foot focus, will record the spectral region from $\lambda 3800$ to $\lambda 7000$; the other one, provided with two prisms and a camera lens (72 inches focal length) of ultra-violet glass, the region from $\lambda 3200$ to $\lambda 4700$.

Another polar axis will carry three spectrographs to secure plates from which the wave-lengths of the emission lines in the inner corona may be measured. One of these, provided with an etalon, is designed to measure, with the highest degree of accuracy, the wave-length of the well-known green line at approximately $\lambda 5303$. The same axis will carry two other spectrographs specially designed for speed in recording faint spectra. With these it is hoped that further data may be obtained concerning the motion of material in the outer corona.

Astronomer J. H. Moore will be in charge of the expedition, and will have as his associate observers Astronomer W. H. Wright and Assistant Astronomer D. H. Menzel, of the Lick Observatory staff, and Associate Professor C. D. Shane, of the astronomical department of the University of California, Berkeley. Mr. Ben Osen, foreman and carpenter, and Mr. J. F. Chappell, photographer, at the Lick Observatory, will assist the observers, and it is probable that one or two astronomers from other institutions will be associated with the party.

Regent William H. Crocker, who financed expeditions sent out by the Lick Observatory to observe the eclipses of 1900, Georgia; 1901, Sumatra; 1905, Spain, Egypt and Labrador; 1908, Flint Island; 1914, Russia; 1918, Goldendale, Washington; 1922, Wallal, Australia; 1923, Lower California; and 1930, Camptonville, California, is the generous patron of the present expedition also. We most gratefully acknowledge our indebtedness to him for the contributions to knowledge it has been possible to make through the successful observations of eclipses in seven of the earlier years, and for giving us the opportunity of adding to them at the coming eclipse.

R. G. AITKEN,
Director, Lick Observatory