

The parabolizing of the 100-inch mirror is progressing satisfactorily in our optical shop, and is now 85 per cent complete. The optical tests for figure are made both at the center of curvature and at the focus of the paraboloid, in the latter case with the aid of a 60-inch plane mirror figured for the purpose.

The erection of the telescope mounting on its pier will be begun in 1916, after the completion of some unfinished work on the larger parts and the painting of the interior of the dome. It is not likely that the telescope can be ready for use before the summer of 1917.

GEORGE E. HALE.

THE SPECTRUM OF THE COMPANION OF SIRIUS.

We have made several attempts during the past two years to secure a spectrum of the companion of *Sirius*. Its position is favorable, the distance, according to Professor BARNARD'S recent measures, being more than 10'' in a position angle of about 70°. The great mass of the star, equal to that of the Sun and about one-half that of *Sirius*, and its low luminosity, one one-hundredth part of that of the Sun and one ten-thousandth part of that of *Sirius*, make the character of its spectrum a matter of exceptional interest.

Most of the spectrum photographs have been taken at the 80-foot focus of the 60-inch reflector with the Cassegrain combination of mirrors. At this focus the distance of the companion from *Sirius* is 1.2^{mm}. The rays from *Sirius*, due to the supports of the auxiliary mirrors, are very prominent, but form angles of about 45° with the line joining *Sirius* with the companion, and so do not reach the slit unless the images begin to blur badly. The main difficulty in securing satisfactory photographs is, of course, the strong general illumination of the field and the presence of subsidiary rays which contribute more or less light to the slit as the seeing varies. During the exposures *Sirius* has been kept on the black metal screen in which is cut the opening forming the star window, while the companion is held in a position slightly to one side of the center of this window. Accordingly it is possible to compare on the photographs the spectrum of the point at which the companion is maintained with the spectrum due to the general

illumination of *Sirius*. The exposure times given have been those normal for a star of 8.5 magnitude.

Two or three photographs obtained in this way showed a decided maximum in the spectrum at the point at which the companion was kept during the exposure. Still there was no distinct line of separation from the general spectrum due to *Sirius*. A photograph taken on October 18th under exceptionally good conditions of seeing does show such a demarcation, however, there being a narrow spectrum corresponding to the point on the slit at which the companion was held, which is separated by a distinct break from the intense spectrum of *Sirius* near the edge of the star window. It is difficult to avoid the conclusion that this is the spectrum of the companion. There was no ray from *Sirius* near this point of the slit and during the entire exposure the companion was well visible and accurate guiding was easily maintained.

The line spectrum of the companion is identical with that of *Sirius* in all respects so far as can be judged from a close comparison of the spectra, but there appears to be a slight tendency for the continuous spectrum of the companion to fade off more rapidly in the violet region. The suggestion has been made by several astronomers that at least a portion of the light of the companion is due to light reflected from *Sirius*. It is, however, by no means necessary to have recourse to this explanation, since in the case of the companion of α_2 *Eridani*, where there can be no question of reflected light, we know of a similar case of a star of very low intrinsic brightness which has a spectrum of type A_0 .

Direct photographs taken by Dr. VAN MAANEN with and without the use of a yellow color screen agree with the spectrographic results in indicating that the companion of *Sirius* has a color index not appreciably different from that of the principal star.

WALTER S. ADAMS.

THE SPECTRUM OF NOVA LACERTÆ (1910).

Two photographs of the spectrum of this Nova were obtained on the nights of September 3d-4th and September 5th-6th with a small slit spectrograph at the primary focus of the