Minor Contributions and Notes.

HARVARD COLLEGE OBSERVATORY. CIRCULAR NO. 10.

SIX NEW VARIABLE STARS.

Lists of suspected variable stars are published in the *Results of the National Argentine Observatory*, Vol. XVI, p. 32, and Vol. XVII, p. 11. These lists contain 527 and 232 stars respectively, in which the magnitudes were found to be discordant in the observations of the Cordoba *Durchmusterung*. Especial attention is there called to 26 stars, which are indicated by exclamation marks. These stars have been looked for on a number of Draper Memorial photographs by Miss E. F. Leland and the results confirmed by Mrs. Fleming. From this examination confirmation of the variability of the stars -24° 12600, -27° 15203, -33° 185, -34° 224, -38° 138, and -38° 13089 has been obtained, the change exceeding one magnitude in all cases. The variation of -22° 13401, -22° 13700, -23° 8083, -24° 13621, -25° 1197, -30° 12799, -33° 13321, -35° 11936, -35° 14568, -37° 11462, -38° 2639, and -41° 12260 on from 8 to 25 nights did not exceed two or three tenths of a magnitude, and the variation of these stars is accordingly not as yet confirmed. In each of these cases two comparison stars were selected, differing about half a magnitude in brightness, one a little brighter and the other a little fainter than the suspected variable. The star -22° 15937 does not appear on photographs taken on 16 nights, although the adjacent star, -22° 15939, is well shown on all. The confirmation by Miss Leland of the variation of -24° 7693 has already been announced (*H. C. O. Circular No. 7*). The confirmation by Mr. Robert H. West of the variation of -25° 1602, -26° 892, and -30° 375, has already been announced by him (*Ast. Jour.* **16**, 85). -25° 1602 and -30° 375 have also been confirmed here from the examination of the photographs. -30° 19092 is R Piscis Austrini. The variation of -33° 13234 was discovered independently by Mrs. Fleming (*H. C. O. Circular No. 6*). The star in the Bonn *Durchmusterung*, -22° 4346, and not found by Thome, does not appear on photographs taken on 8 nights.

It therefore appears that of these 26 stars, 12 are variable, the variability of 12 is not confirmed, and 2 do not appear on the photographs examined.

The laborious work of taking out all the photographs of the regions containing these six new variable stars, measuring the brightness, the magnitude at maximum and minimum, the period and form of light curve, as has been done for other variable stars discovered here, is now in progress.

EDWARD C. PICKERING.

AUGUST 13, 1896.

HARVARD COLLEGE OBSERVATORY, CIRCULAR NO. 11.

A NEW SPECTROSCOPIC BINARY μ^1 SCORPII.

FROM an examination of the Draper Memorial photographs Professor Solon I. Bailey has found that the star μ^1 Scorpii is a spectroscopic binary. This star is $-37^\circ 11033 = S.\,M.\,P.\,5794$. Its approximate position for 1900 is in R. A. $16^h\ 45^m.1$, Dec. $-37^\circ\ 53'$, and its photometric magnitude is 3.26. Its spectrum is of the first type and contains the additional lines characteristic of the Orion stars. It, therefore, belongs to Class B according to the notation of the Draper Catalogue. The star μ^2 Scorpii follows about 28^s and is $1'.7$ north, and its photometric magnitude is 3.74. The spectra of both stars, therefore, appear side by side in the photographic plates. In some they are scarcely distinguishable, while in others the lines of the first star are broad and hazy, some of the faint lines appearing distinctly double. The lines in the spectrum of the second star are always single and well defined. One of the components of the binary is fainter than the other, so that the lines of its spectrum are sometimes of greater, and sometimes of shorter, wave-length than those of the brighter component. The difference in intensity also seems to change as if due to a variation in the light of one of the components.

An examination of the plates already sent to Cambridge shows that the spectrum of this star was photographed on October 2, 1892, July 20, 1894, and July 31, 1894. On the first of these plates the lines are single, on the second they are wide and hazy, and on the third they are double. When Mrs. Fleming examined these plates in October 1894, she recorded on the second of them "Lines double?" and on the third of them "Lines double." They were laid aside for further examination but were overlooked.