MR. T. FISHER UNWIN has published a second edition of "Methods in Plant Histology," by Dr. C. J. Chamberlain, of the University of Chicago. The first edition of the book appeared in 1901, and was reviewed in our issue of November 28, 1901 (vol. lxv., p. 75). It is only necessary to say of the present edition that more attention has been given to the collection of materials. Prof. Kleb's methods for securing various reproductive phases in the algæ and fungi have been outlined, and methods for growing other laboratory material are more complete. New chapters dealing with microchemical tests, free-hand sections, special methods, and the use of the microscope are included.

OUR ASTRONOMICAL COLUMN.

SUN-SPOT AND CHROMOSPHERIC SPECTRA.—A paper of exceptional interest to workers in solar physics was read by Prof. A. Fowler at the April meeting of the Royal Astronomical Society.

Whilst observing the bright lines in the spectra of metallic prominences on the sun's limb, Prof. Fowler has been able to classify them into "long" and "short" lines, a fact which points to their origin being in the higher and the lower chromosphere respectively; he also states the fact that the lines emitted by the upper chromosphere, the "long" lines, are those which, speaking generally, are enhanced when passing from the arc to the spark in terrestrial spectroscopy.

Further, Prof. Fowler found that these long lines are generally *weakened* in sun-spot spectra, whilst the short lines are generally widened, or *strengthened*. The evidence for this differential treatment of "enhanced" and "arc" lines in the solar atmosphere is most conclusive for the elements iron, titanium, and chromium (the *Observatory*, No. 370).

PROPOSED DAILY PHOTOGRAPHS OF CHROMOSPHERIC RADIATIONS.—A paper by M. Deslandres, which is published in the *Comptes rendus* for May 7, discusses in detail the possibility of obtaining daily photographs of the radiations emitted by the solid and liquid particles of the chromosphere, without waiting for the rare occasions afforded by total eclipses of the sun.

In order to do this M. Deslandres proposes to employ an apparatus similar to that used by him for the same purpose during the last eclipse, and to obtain a concentrated image of the chromosphere, without the photosphere, by a special arrangement of mirrors and lenses.

If the coloured screens are insufficient, it is suggested that the spectroheliograph might be employed. By obtaining the ordinary spectroheliograms with K_1 and K_2, and then another in which the bright interspaces, *i.e.* the continuous spectrum, were projected on to the primary slit, it would be possible to separate the parts due to the particles from those parts of the chromospheric radiations due to permanent gases.

M. Deslandres further suggests that the same methods, if successful in this instance, might be employed for the analysis of the structure of other celestial bodies such as nebulæ and comets.

STARS WITH VARIABLE RADIAL VELOCITIES.—A list of four stars the radial velocities of which have been found to be variable is published by Mr. J. H. Moore in No. 3, vol. xxiii., of the *Astrophysical Journal*.

The radial velocity of τ Ursæ Majoris has been found to vary between -1 km. and -10 km., that of λ Hydræ between $+15$ km. and $+24$ km., and that of μ Ursæ Majoris between -16 km. and $+27{\cdot}4$ km. In the case of Y Ophiuchi, discovered to be a spectroscopic binary by Mr. S. Albrecht, the variation of the velocity is found to agree, in point of time, with the light variation, both having the period 17·12 days.

Four other spectroscopic binaries with variable velocities are announced by Prof. Frost in the same journal. The first two, B.D. $-1°{\cdot}1004$ and 29 Canis Majoris, are remarkable for the long range of their velocities and their short periods. In the former of these two, the radial velocity changed from $+132$ km. on February 12 to -34 km. on February 16, whilst that of the second star changed as follows:—1906 January 26, -164 km.; January 29, -3 km.; February 12, -243 km.; February 16, -92 km. Owing to under-exposure, these results are, however, slightly uncertain.

The stars μ Orionis and T Monocerotis have also been shown to have variable velocities in the line of sight.

OBSERVATIONS OF NOVA PERSEI NO. 2.—No. 96 of the Lick Observatory Bulletins is devoted to the publication of the results obtained by Messrs. Townley and Maddrill from magnitude observations of Nova Persei No. 2.

The observations extended over the period February 24, 1901, to July 5, 1902, the magnitude on the latter date being 9·4.

The table given contains the weighted, mean magnitudes of the Nova on more than one hundred nights, with notes on the observing conditions and the comparison stars and instruments employed.

OBSERVATIONS OF SHADOW BANDS.—In No. 4086 of the *Astronomische Nachrichten* Dr. M. Roso de Luna, of Madrid, briefly describes a new arrangement of screens for the observation of the shadow bands during total eclipses of the sun. Altogether he proposes to employ six screens, one horizontal, two vertical (N. and S. and E. and W.), one oriented to the azimuth of the sun at the moment of totality and another perpendicular to it, and one placed in the direction of the wind.

Such an arrangement was employed at Soria (Spain) during the last eclipse, and the following results obtained:—breadth of bands, 2 cm.; distance from one band to the next, 6 cm.; velocity of the movement of the bands, 30 metres per minute.

THE RADIAL MOTION OF β ARIETIS.—In No. 4090 of the *Astronomische Nachrichten* Herr H. Ludendorff publishes the results obtained from an investigation of the radial velocities of β Arietis during the period October 21, 1902, to December 16, 1904.

Thirty-seven spectrograms were obtained with the spectrograph No. iv. (three prisms) of the Potsdam Observatory attached to the 32·5 cm. refractor, and the range of the velocities determined was from $+60$ km. (on January 19, 1903) to -17 km. (on December 25, 1903).

From an analysis of the results, Herr Ludendorff concludes that the period of β Arietis is $321/n$ days, where n is equal to or less than 5.

PUBLICATIONS OF THE NICOLAS OBSERVATORY, ST. PETERSBURG.—We have just received vols. iii. and xiv. (series ii.) of the "Publications de l'Observatoire central Nicolas, St. Petersburg."

The former contains a catalogue of right-ascensions of the principal stars contained in the Pulkowa catalogue for the epoch 1885·0, the results being based on observations made between September, 1880, and November, 1887, with the meridian telescope. The catalogue is published in the same form as those which appeared in 1845 and 1865.

Vol. xiv. contains a part of the results of the observations made with the vertical circle of the observatory between May 1, 1896, and May 19, 1899. The remaining part of the results and the discussion of the whole are reserved for the next volume (xv.) of the publications.

THE ROYAL OBSERVATORY, GREENWICH.

THE annual inspection of the Royal Observatory, Greenwich by the Board of Visitors took place on Wednesday, May 30, when the Astronomer Royal submitted a report of the work accomplished during the twelve months May 11, 1905, to May 10, 1906. A brief summary of this report is given below.

The new working catalogue of stars of the ninth magnitude and brighter, situated between declinations $+24°$ and $+32°$, is now complete, and includes more than 12,000 stars; the star-places have all been accurately brought up to 1910 from the Astronomische Gesellschaft catalogues.

A new determination of the pivot errors of the transit instrument, made during November, showed that the errors in the form of the pivots are insensible. The determination of the co-latitude for 1905 has been delayed by the necessity