THE twelfth edition, revised, of Mr. W. T. Lynn's small volume on "Celestial Motions" has been published by Messrs. S. Bagster and Sons, Ltd., price 2*s*. net. The book is an easy introduction to the main facts of astronomical science, and the frequent re-issues enable the author to keep it up-to-date.

MR. JOHN BROWNING has issued the fourth edition, rewritten and revised, of his concise little book "How to Work with the Spectroscope." The book provides beginners with a handy guide to the use of spectroscopes of various kinds, including McClean's star spectroscope, the microspectroscope, and others; and we welcome it as a simple means of extending the circle of observers of spectroscopic phenomena. The price of the book, with a coloured chart of spectra, is 1*s*. 6*d*., and without the chart, 9*d*.

OUR ASTRONOMICAL COLUMN.

NEW ELEMENTS FOR HALLEY'S COMET.—In a note appearing in No. 419 of the *Observatory* (February, p. 104), a set of elements for Halley's comet, deduced by Mr. C. J. Merfield from the observations made since the re-discovery of the comet in September last, is compared with the elements predicted for this return, as follows:—time of perihelion passage, April 19·6394 (G.M.T.), $\omega = 110° 43' 24''$ (= predicted + 68″), $\Omega = 57° 15' 56''$ (= predicted − 16″), $i = 162° 12' 34''$ (= predicted − 8″), $e = 0{\cdot}967300$ (= predicted + 0·000019″), and $\mu = 46{\cdot}6723''$ (= predicted + 0·003″). From these elements Mr. Crommelin has calculated the conditions for the comet's transit over the sun, and finds that the first contact should take place on May 18d. 14h. 22m. (G.M.T.) in position angle 264°. Thirty minutes later the centres of the two bodies will be at their least separation, the comet being 62″ south. Last contact should occur at 15h. 22m., in position angle 92°, and the horizontal parallax of the comet will be 54·4″, or 45·7″ relative to the sun. The transit will be visible in Australia, the Pacific, and Asia, and it is sincerely to be hoped that careful and comprehensive observations will be made, for they may provide useful additions to our knowledge concerning the constitution of the denser portions of the comet.

In the same journal Father Cortie discusses the alleged Papal excommunication of Halley's comet ("The Devil, the Turk and the Comet") in 1456, and quotes conclusive evidence showing the story to be a myth.

STUDIES OF SOLAR AND STELLAR SPECTRA.—In two recent communications to the Academy of Sciences (*Comptes rendus*, Nos. 1 and 3), Count A. de Gramont publishes some interesting results as to the occurrence of what he designates *raies ultimes* in the spectra of the sun and various stellar types.

The *raies ultimes* of an element are those lines which persist in the spectrum throughout the range of flame, arc, and spark conditions. Treating different alloys in which the quantity of a component continuously decreases, M. de Gramont finds that the first lines to disappear from the spectrum are the "spark" lines, then those produced in the arc, and lastly the "flame" lines; the most persistent lines are the *raies ultimes*. On the hypothesis that the spectra of the various regions of the sun are dissociation spectra, and that their differences are due principally to variations of the proportions of elements present, M. de Gramont hopes to find indications which will show, more or less, the regions of the sun, and he gives a list of the most persistent and the most sensible lines of seventeen elements already traced in the solar spectrum.

M. de Gramont further points out that the absence of the lines of the metalloids, &c., from the solar spectrum should not be accepted as proof that these substances do not exist in the sun, for he has already shown that the "ultimate" lines of many of them exist in the more refrangible part of the spectrum which our atmosphere absorbs. The "ultimate" lines of gold occur at λλ 2676·0 and 2428·1, and it is suggested that this is the reason that gold has, so far, been considered as absent from the sun.

In the second paper M. de Gramont considers the distribution of *raies ultimes* in different stellar types, having studied for this purpose the Harvard classifications, the numerous publications of Sir Norman Lockyer, and the works of Sir William Huggins. Using the nomenclature of Miss Cannon, in the Draper Catalogue, he finds that these ultimate lines do not occur in the hottest stars, but make their appearance in B8A, the Algolian type, and generally increase in intensity as the lower types are reached. In the *c* division the "ultimate" lines appear at a stage later, and in less numbers, than in the *a* division. M. de Gramont points out that the *c* division corresponds with Sir Norman Lockyer's "ascending series," of which the most characteristic types are the Rigelian and the Cygnian, in which predominates the "test spectrum" or spectrum of enhanced lines. The presence of oxygen and nitrogen lines in the helium stars, lines dissimilar to the ultimate lines, is taken as an indication that in such stars powerful electrical discharges are in action.

M. de Gramont concludes by suggesting that the presence or absence of "ultimate lines" in the spectra of stars may furnish valuable indications of the relative temperatures, or the stage of evolution, of the different types, and is equally applicable to the Harvard classification and the conceptions of Sir Norman Lockyer.

MARKINGS ON MARS.—Too late for insertion at the end of his letter on Martian markings as seen with small and large telescopes, published in last week's NATURE (p. 397), Prof. Lowell writes:—"It will prove of interest to students of the subject that this optical shattering of lines, due to a large glass, is precisely what M. Antoniadi observed at Meudon in his observations of Mars. He saw in the canals, in place of lines, a tesselated series of dots. His observed mosaic effect is the exact theoretic effect that a large aperture should produce on continuous lines such as the canals, and always does produce in the case of the rings in the images of a star."

ELEMENTS AND EPHEMERIS FOR TEMPEL'S COMET (1873 II.).—In No. 4386 of the *Astronomische Nachrichten* M. Maubant gives the elements and a search-ephemeris for Tempel's second comet, which is expected to pass through perihelion in the near future. The conditions are not favourable for observation.

THE NEW COMET (1910*a*).

ALTHOUGH by its increasing distance from the sun and the earth, and by its apparent recession into the sun's rays, the great comet of 1910 is becoming less popular as a spectacle, the interest among astronomers as to the results accruing from the mass of observations will doubtless continue for a long period. From observers situated in many parts of Europe and Africa we are receiving further evidence of this comet's title to rank among the "great comets" of history.

In sending us the drawing here reproduced, Father Cortie encloses some valuable observations of the comet's appearance on January 26. The drawing was made by Mr. William McKeon, an assistant at the Stonyhurst College Observatory, at 6 p.m. January 26, and in making the observations a small pocket telescope of 1½ inches aperture and 17 inches focal length was employed. The following are Mr. McKeon's remarks concerning the comet's appearance at the time:—"Nucleus of the comet bright and sharp; no merging into the tail, magnitude 2. Nucleus of comet 2° S. and 7° W. of Venus (estimated). The tail terminated at a star of about the seventh magnitude some 8° N. by E. of the head. The star to the right of the comet (N. by W.) was of about the third or fourth magnitude."

Father Cortie identifies this latter star as α Equulei, magnitude 4·1, and thence deduces that the length of the tail, as seen in the small telescope employed, was about 7½°. Naked-eye observations by himself showed the tail extending almost to ε Pegasi, which would make its length 12°; its breadth at the end, he estimated, was about 3°. The sky was perfectly clear, and the tail of the comet