

given annually for "meritorious achievement in electrical science, electrical engineering, or the electrical arts", by a committee of the American Institute of Electrical Engineers.

MESSRS. W. and G. Foyle, Ltd., 119 Charing Cross Road, W.C.2, have just circulated a catalogue of their No. 7 department, containing the titles of books, both second-hand and new, relating to most branches of technology and applied science. Being carefully classified the catalogue should be of service to many readers. The list is obtainable upon application.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—

A research scholar in mental diseases under the Joint Board of Research for Mental Diseases of the University of Birmingham and the City Mental Hospital Committee—E. Eyles, Hon. Secretary, Council House, Birmingham (Jan. 24). An advisory research entomologist at the Seale-Hayne Agricultural College, for the South-West Province—The Principal, Seale-Hayne Agricultural College, Newton Abbot, Devon (Feb. 8). A physicist or engineer to carry out researches and standardisation in wireless telegraphy and telephony, and a physicist to carry out researches in optics, each under the National Research Council of Canada—The Secretary-Treasurer, National Research Council, Ottawa, Canada.

Our Astronomical Column.

The Near Approach of Eros.—Prof. H. N. Russell gives, in the *Scientific American* for January, a clear account of the methods being employed for using the present approach of Eros for obtaining improved values of the solar parallax and the mass of the moon. He estimates that fully ten years will be needed for a full discussion of the measures: but there is one source of delay that he has not considered. Several observatories have been co-operating during the past six or seven years in obtaining accurate places of selected stars near the planet's track. But the track diverges appreciably from the predicted one, to the extent of 1 minute of time in R.A. at the nearest approach. This makes some of the selected stars unsuitable, as being too far from the planet. It will be necessary to select others on the opposite side of the planet to take their place, and these will need to be carefully observed. One precaution that was not considered in 1901 is now being taken. The spectra of the stars have been examined, and those that differ markedly in type from Eros (the spectral type of which resembles that of the sun) will be rejected, owing to the different amount of their refraction by the earth's atmosphere. The article notes that the opposition of 1938, though inferior to the present one, will be much better than that of 1901, which was the best since the planet was discovered in 1898. 1968 will be about equal to 1938, and the next really favourable oppositions will be in 1975 and 2012.

Axial Rotation of Stars.—In the *Astrophysical Journal*, vol. 72, p. 1, Dr. O. Struve discusses the spectroscopic evidence for the existence of rapidly rotating stars. The occurrence of rapid rotations is assumed in many astronomical theories, such as the fission theory of binaries, but so far there has been no direct evidence that they are anything but rare exceptions. Dr. Struve shows that broad, shallow absorption lines are caused by axial rotation. The broadening exhibits the proportionality to wavelength required by the Doppler effect, and the line contours agree with the theoretical shapes for rapidly rotating stars. There is also a correlation of line width with period and amplitude in spectroscopic binaries. Two stars (α Virginis and η Ursæ majoris) are treated in detail, and the evidence suggests the existence of an evolutionary transition between close spectroscopic binaries and rapidly rotating stars, though the direction of such transition is not established by the observations.

Old Eclipses of Jupiter's Satellites.—Some of the secular variations of the elements of Jupiter's satellites are so slow that they cannot be satisfactorily

determined from recent observations alone. All the calculators of tables of the satellites have made some investigations of this kind; that which Prof. W. de Sitter has lately published in *Annals of Leiden Observatory*, vol. 16, part 4, is one of the most complete. The earliest observations used are those of Wargentin, beginning in 1668; the extensive list prepared by Delambre in preparation for the construction of his tables has also been used. The systematic errors of the observations have been investigated; they are very considerable, but in spite of these a very marked improvement in the secular variations of the elements of satellite III has been obtained in this discussion. The improvement is less noticeable in the cases of satellites I and II, as their changes are more rapid and can be determined from the modern observations.

Prof. de Sitter is much interested in the question of the changes of the earth's rate of rotation, and includes a discussion of the evidence afforded by Jupiter's satellites; the old observations do not add much weight to the determination. He considers that the amount of uncertainty of his curve derived from all sources is not more than 5 seconds at the date 1670; the uncertainty from the satellites at the date 1750 is fully 10 seconds.

A New Catalogue of the Naked-eye Stars.—The Yale University Observatory has published a useful catalogue of 9110 stars, edited by Prof. F. Schlesinger. It contains practically all the stars down to mag. 6.5 and a few fainter ones. The reference numbers in Boss P.G.C. and in the northern and southern Durchmusterungs are given. The positions are given only to the nearest time second in R.A. and the nearest minute of declination. The Proper Motions have been revised and, where possible, are given to the third decimal of a second of arc; those in R.A. are expressed in great circle. The spectral type, parallax, and radial velocity are given, where they are known. There is also a column of remarks, which includes notes of companions, of variation of light, or of radial velocity. There is also a table for reduction to galactic co-ordinates, and one giving the new constellation boundaries as fixed by a committee appointed by the I.A.U. The following systematic corrections have been applied to the proper motions of the P.G.C.:

$$\begin{aligned} \text{In R.A.} &+ 0.00021^s & - 0.00015^s \sin \text{R.A.} \tan \text{Decl.} \\ \text{In Decl.} &- 0.0023'' \cos \text{R.A.} \end{aligned}$$

A bad misprint on page 4 of the introduction should be corrected. The R.A. of the galactic pole is given as $18^h 40^m$; it should be $12^h 40^m$.