

of this work, and some new experiments by the authors are given. The report will prove useful to all who are interested in this very important subject.

MESSRS. DULAU AND CO., LTD., 34 Margaret Street, W.1, have just issued a valuable catalogue (No. 100) of upwards of 2600 second-hand science books and serials which they have for disposal. The list is conveniently arranged under the headings—ornithology, entomology, conchology, the lower invertebrates, general zoology, botany, horticulture, agriculture, geology, mineralogy, astronomy, mathematics,

engineering, and early medical works. It should interest many readers of NATURE.

AMONG the books shortly to be published by the Oxford University Press is "The Glass Palace Chronicle of the Kings of Burma," which has been translated for the Burma Research Society by Pe Maung Tin and G. A. Luce. The chronicle is the work of the committee of "learned monks, learned brahmins, and learned ministers" appointed in 1829 for the purpose by King Bagyidaw of Burma. The title is taken from the Palace of Glass, in a chamber of which the compilation was made.

### Our Astronomical Column.

GREECE ADOPTS THE GREGORIAN CALENDAR.—The Gregorian Calendar was adopted for civil purposes in Greece from the beginning of March. As Russia has apparently taken the same step, the old or Julian style becomes practically obsolete. M. D. Eginitis, director of the Athens Observatory, contributes a paper to the *Comptes rendus* of the Paris Academy of Sciences, March 12, in which he notes that the finding of the decree of Nicæa, A.D. 325, shows that, far from prohibiting such a change, it in reality rather demands it. The decree simply directed that Easter should everywhere be kept on the same day; by implication this day was the first Sunday after the 14th day of the first lunation after the spring equinox, which was assumed to occur on March 21. When it was found that the Julian Calendar did not maintain the equinox at this date, the reform at once became appropriate. The causes that for so long retarded its acceptance in eastern Europe were largely removed by the War, and M. Eginitis addressed a memorandum to the Greek Government in December 1918, which has now been followed.

The Greek Church is not at present adopting the reform, the reason being the expectation of the speedy adoption of other calendar changes in the west, for which it prefers to wait.

Some of these reforms are being discussed by the International Congress of Chambers of Commerce now meeting in Rome; but experience shows the extreme difficulty of persuading the world to adopt changes in their fixed habits, however desirable in themselves, so that we can scarcely share the sanguine view of M. Eginitis, who shares the expectations just mentioned.

THE EIGHTH SATELLITE OF JUPITER.—Prof. E. W. Brown contributes an article on this satellite to *Astronom. Journ.* No. 817. He makes use of Delaunay's algebraical expressions for the various terms, which are theoretically available for any satellite; however, in cases of such large eccentricity and inclination as those of J. VIII the terms do not converge rapidly enough to be used straight away. Prof. Brown, whose great experience gained in his new lunar theory comes useful, shows how estimates may be made of the remainders, and in particular finds a solution for the mean motion of the perijove. The general rule both with planets and satellites is that the apse moves in the same direction as the body, but in the case of J. VIII the higher terms of the series reverse the earlier ones, and produce motion in the opposite direction. Prof. Brown refers in his work to G. W. Hill's paper on the motion of the lunar perigee; it is interesting to recall that it was this work of Hill's that gave Brown the idea that he afterwards followed so successfully in his lunar theory.

The period of revolution of the perijove of J. VIII is about 800 years, an unusually long period for a

satellite. It is welcome news that Prof. Brown proposes to continue his work till he has arrived at expressions which will enable the place of the satellite to be predicted without the tedious method of mechanical quadratures. Mr. J. Jackson has also been at work on the satellite, using a combination of observed and calculated positions, and gives an ephemeris for the present apparition in the *Observatory* for March. The chief importance of observing this satellite and the still fainter J. IX is that they will ultimately give a better value of Jupiter's mass than any other method.

ASTRONOMY IN THE UNITED STATES.—The section of Year Book, No. 21, of the Carnegie Institution of Washington, dealing with astronomical work carried out in departments of the Institution includes several items of general interest. The so-called K-term in radial velocities, that is, an average motion of recession shown by all spectral types, but especially by type B, where it amounts to 4 km./sec., is discussed. More than half of this is removed by adopting newly determined wave-lengths for the lines of oxygen, nitrogen, silicon and helium that were used; it is further pointed out that certain lines formerly used were double, and therefore unsuitable. A small residual recession may be due to the Einstein effect. Work on the proper motions of the red stars has shown that these are generally small in the case of types M and N; M stars have large radial velocities, they are therefore mainly giants, and very distant. The radial velocities of type N stars are small, indicating that their average mass is high. Both types give much the same direction for solar motion as that generally adopted.

Studies have also been made on the progressive differences of spectra from type B<sub>0</sub> to B<sub>8</sub>. In B<sub>8</sub> the oxygen and nitrogen lines disappear, while a number of enhanced metallic lines appear; it is anticipated that discussion of these facts may advance the theory of ionisation, and our knowledge of the constitution of matter.

The meridian observers seem to be worked very hard; they are on duty for a week at a time, and observe time-stars at intervals not exceeding 6 hours, besides circumpolars at both culminations. What would the advocates of an 8-hour day say to this? The object is to eliminate personality, but it is found that when an observer is fatigued he observes differently than he does when fresh. One of the objects of this series of observations is to determine the laws of differential refraction both in Right Ascension and Declination, and if possible to connect it with the meteorological conditions. There is little doubt that differential refraction is the cause of the perplexing variations in time-determinations from different observatories, and that its determination would mean a marked increase of accuracy in meridian work.