

THE Journal of the British Science Guild for November contains an account of the annual meeting held in June last, when addresses were delivered by Lord Sydenham (the retiring president), Lord Montagu of Beaulieu (his successor), and others. Since then the Guild has lost by death its founder, Sir Norman Lockyer, and a past-president, Sir William Mather. In the account of the administrative activities of the Guild attention may be directed to the contribution by Dr. J. W. Evans, chairman of the Committee on the Utilisation of Science in Public Departments. Some interesting evidence of the results of undue centralisation in various Departments has been collected, and the need for a Royal Army Scientific Corps, with which should be associated a special research institution, is strongly emphasised. It is interesting to observe that the Admiralty now possesses a Scientific Research Department, and a specially contributed account of this new organisation appears in the Journal. Among recent papers on the Guild's objectives reference may be made to "The Human Factor in Industry," by Mr. Alexander Ramsay. An account is given by Prof. C. S. Myers of the work of the Institute of Industrial Psychology, which he represents as a *liaison* member on the Guild's executive committee. It is stated that the catalogue

of British scientific and technical books in preparation by the Guild is now complete, and contains about 6000 titles. The scheme of forming provincial groups of the Guild appears to be making progress, the first local committee having been already set up in Aberdeen, with Prof. Alex. Findlay as secretary.

A COMPREHENSIVE and valuable catalogue (No. 408) of works relating to South Africa has just been circulated by Mr. F. Edwards, 83 High Street, Marylebone, W.1. It contains upwards of 700 titles. Many of the volumes are rare and difficult to obtain. Among the items offered for sale is the Godlonton correspondence—Sir Harry Smith: "A Collection of Fifty-one Autograph Letters, Signed, to the Hon. R. Godlonton," mostly marked "Private" or "Confidential," and wholly unpublished. The catalogue is one to be seen by librarians and others interested in the development of South Africa.

PROF. J. F. DOBSON, professor of Greek in the University of Bristol, and Dr. S. Brodetsky, lecturer in applied mathematics in the University of Leeds, have nearly completed their translation of the "De revolutionibus orbium celestium" of Nicholas Copernicus. The translation will be accompanied by a Life of Copernicus and some account of his influence and the history of the views connected with his name.

### Our Astronomical Column.

TIDAL FRICTION AND THE LUNAR ACCELERATION.—Mr. G. I. Taylor contributed a paper to Phil. Trans., A, vol. ccxx., on tidal friction in the Irish Sea, from which it appeared that fifty Irish Seas would provide sufficient dissipation of energy to account for the secular acceleration of the moon. Dr. H. Jeffreys returns to the subject in Phil. Trans., A, vol. ccxxi., examining the various seas where such action is probable, and obtaining details of tides and currents from Admiralty publications. The seas that contribute most are largely enclosed, but an opening is required sufficient to admit the tide. The Mediterranean, Red, and Baltic Seas are thus excluded. Bering Sea is by far the largest contributor. It is concluded that two-thirds of the total action takes place there. The Yellow Sea, Malacca Strait, and the American North-West Passage come next. The famous tides of the Bay of Fundy contribute somewhat less than the Irish Sea.

The total rate of dissipation of energy is  $2.2 \times 10^{19}$  ergs per second. Taking the excess of the moon's secular acceleration above the portion due to diminution of eccentricity of the earth's orbit as  $9''$  per century per century (equivalent to  $4\frac{1}{2}''$  on the usual erroneous method of measuring by space gained instead of velocity gained), the equivalent dissipation is  $1.4 \times 10^{19}$  ergs per second. It is noted, however, that several of the data used were spring-tide values. Allowing for this, the agreement is quite as good as could be expected. It is the first time that a satisfactory estimate of the tidal friction has been made, and the author notes that it seems capable of satisfying all the quantitative demands made on it. He had previously expressed doubts on this point, but he had not then realised that the land-locked seas, not the open ocean, were the chief contributors.

Dr. Jeffreys also notes that the diurnal tides have a slight effect on the obliquity of the ecliptic, reducing

it to  $1/e$  of its original value in about  $10^{10}$  years. The effect within historic times would be quite inappreciable.

THE SOLAR SPECTRUM FROM 6500 Å. TO 9000 Å.—Vol. vi., No. 3, of the Publications of the Allegheny Observatory contains an investigation of the red and infra-red region of the solar spectrum made by Mr. W. F. Meggers using plates stained with dicyanin and a large plane grating lent by the Johns Hopkins University; it was ruled by Prof. J. A. Anderson, and has 15,000 lines to the inch. The spectra of the opposite limbs of the sun were photographed in juxtaposition, the Doppler effect thus produced serving to distinguish solar and telluric lines. A large number of the latter are assigned (some tentatively) to water-vapour. The region 6500 to 7300 overlaps Rowland's table, the two tables being printed side by side. This region contains 473 solar lines and 596 telluric lines, while the region 7300 to 9000 contains 495 solar and 838 telluric lines. The infra-red spectra of many of the elements are still uninvestigated, but more than half of the solar lines in this region have been identified. In particular, the evidence for the presence of potassium in the sun is strengthened; besides the line at 4044 already known, lines are found at 7664 and 7699. The former partly overlaps a strong line in the A band of oxygen (telluric), but the Doppler effect permits it to be seen separately. There is a general absence of elements with high atomic weights; in explanation of this a sentence is quoted from Abbot's "Sun" (p. 253) stating that these elements would probably lie at too low a level for their lines to be seen at the limb. Seven elements (rhodium, ruthenium, palladium, gallium, europium, helium, and oxygen) are added to the thirty-six solar elements in Rowland's list. Oxygen is shown by the lines 7771, 7774, 7775, and 8446 (doublet); these lines have Doppler displacements.