

tion in the principles of boot and shoe manufacture under the Northamptonshire County Council Education Committee—The Secretary for Education, County Education Offices, Northampton (April 13). A Dickinson research travelling scholar in medicine, and a Dickinson research surgery scholar at the Manchester Royal Infirmary—The Secretary to the Trustees, Royal Infirmary, Manchester (April 18). An assistant lecturer in geology at the University College of Swansea—The Registrar, University College, Singleton Park, Swansea (April 18). A lecturer in physiology in the University of Bristol—The Secretary and Acting Registrar, The University, Bristol (April 24). An assistant lecturer in education at the University College of Hull—The Registrar, University College, Hull (May 6). An assistant lecturer in geography at the University College of Hull—The Registrar, University College, Hull (May

9). A professor of chemistry in the University of Sheffield—The Registrar, The University, Sheffield (May 15). A Pilkington fellow in cancer research, an Amy Henrietta Worswick fellow for the investigation of the causes and treatment of rheumatoid arthritis, and a Knight fellow for the study of the factors concerned in the development of the symptoms of mental disturbance, in the University of Manchester—The Registrar, The University, Manchester (June 1). A temporary lecturer in educational psychology and hygiene at Goldsmiths' College—The Warden, Goldsmiths' College, New Cross, S.E.14. A research fellow at the Liverpool and District Hospital for Diseases of the Heart—The Secretary, Heart Hospital, Oxford Street, Liverpool. A junior chemist at the Rubber Research Institute of Malaya—The Secretary, London Advisory Committee, 2 Idol Lane, Eastcheap, E.C.3.

Our Astronomical Column.

Total Eclipse of the Moon.—It is several years since a total eclipse of the moon has been visible under favourable conditions in the British Isles. Advantage should therefore be taken of the occasion on April 2, though the moon's altitude will not be great. In London, the sun sets at 6.33 P.M., the first contact with the umbra having occurred 10 minutes earlier; totality begins at 7.22, and lasts for 1½ hours; the last contact with the umbra is at 9.52.

Observations of occultations of faint stars during totality can be utilised for obtaining improved values of the moon's diameter and parallax; also studies of the colours and degrees of brightness of various regions of the moon's disc enable inferences to be drawn as to the transparency of the earth's atmosphere in the regions where the moon is on the horizon. Mr. L. Richardson contributed several papers to the *B.A.A. Journal* on this subject; he showed that it is only the lower layers of the earth's atmosphere that are effective in refracting light to the central regions of the umbra.

Who discovered Jupiter's Satellites?—J. H. Johnson, in the *B.A.A. Journal* for January, vindicates the claim of Simon Mayer to have discovered the four great satellites of Jupiter some days before Galileo, and to have deduced better values of their distances from Jupiter and their periods than those of Galileo. He gives long quotations from the original documents, and refers to J. Bosscha's paper in *Archives Néerlandaises des Sciences*, 1907. Galileo himself denounced Mayer; but his attacks appear to have been unjust, and a good deal of evidence is given in the paper that Mayer's work was independent. His values for the diameter of Jupiter and the radii of the satellite orbits suggest that his telescope gave better definition than Galileo's did. He received two excellent lenses made by John Baptist Lenccius, of Venice, early in 1610; but he had observed the satellites with another telescope in December 1609. In explanation of the fact that neither he nor Galileo noticed satellite IV. on Jan. 8, 1610, it is pointed out that it was then at elongation, far outside the other satellites, and that there were other stars of similar brightness near it. Mayer was the first to publish tables of the satellites. Bakhuyzen has shown that a fixed star which Mayer inserted in a sketch taken on Dec. 30, 1610, is in the right place; this adds weight to the genuineness of

Mayer's observations. Most modern works continue to give Galileo's name as the sole discoverer, so it is well to direct attention to Mayer's claims.

Eros.—Signor L. Jacchia, of Bologna, discusses the light-variation of Eros in *Astr. Nach.*, 5761. He finds for the period of variation 0.10973 days; most observers consider that the true period is twice as long, being formed of two waves that are similar to each other but not quite identical. The magnitude at minimum changed from 12.04 on Oct. 27 to 10.96 on Nov. 23. The amplitude of the light-variation is given as 1.12 magnitude on Oct. 22; 1.08 magnitude on Nov. 12; 1.26 on Nov. 23.

Report of the Naval Observatory, Washington, for 1930.—Details are given concerning the sending and reception of wireless time-signals. The maximum error of the Annapolis signal was 0.21 sec., the average error 0.038 sec. The signals from Rugby and Bordeaux were received on most days.

The *Nautical Almanac* for 1933 is practically completed. The list of stars with ephemerides has been increased by 36. A new star catalogue is being formed from 72,330 observations made with the 9-inch transit circle between 1913 and 1926. A table comparing the mean declinations of fundamental stars in different zones with those in various standard catalogues is given in the report. The 26-inch equatorial was used for observing the satellites of Jupiter and Saturn, also comets, minor planets, and occultations of stars by the moon. Photography of the sun was continued; photographs were secured on 308 days, which is a record number. The connexion of sunspots with magnetic disturbances and radio transmission is being investigated. Predictions of magnetic storms have been occasionally issued by post card. An expedition was sent from the observatory to Honey Lake, Calif., for the eclipse of April 28, 1930. The corona could not be photographed; but the position of the central line was fixed, and found to be very close to the predicted one. A collection of 625 books belonging to Prof. Asaph Hall, jun., was presented by his widow to the observatory.

Visitors are admitted to the observatory on Thursday evenings; 2824 visitors came during 1930 and they were shown objects of interest with the 12-inch equatorial.