and joinery at the Acton Technical Institute—The Principal, Chiswick Polytechnic, Bath Road, Bedford Park, W.4 (Aug. 8). An assistant master to teach mechanical engineering subjects to junior technical pupils and evening adult students at the Redhill Junior Technical School—The Clerk to the Governors, Education Office, Municipal Buildings, Reigate (Aug. 8). A junior technical officer in an Admiralty Experimental Establishment the work of which consists mainly of design in connexion with acoustical and electrical apparatus — The Secretary of the Admiralty (C.E. Branch), Whitehall, S.W.1 (Aug. 11). A wood workshop instructor for the Junior Technical School of the Coventry Municipal Technical College—The Director of Education, Council House, Coventry (Aug. 15). A research chemist under the Safety in Mines Research Board, for the study of ionisation during gaseous explosions — The Under Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, S.W.1 (Aug. 18). A woman demonstrator and assistant lecturer in the department of chemistry of the Royal Holloway College — The Principal, Royal Holloway College, Englefield Green, Surrey (Aug. 30). A physics graduate at the Northampton Polytechnic Institute, partly for teaching and partly for research in ophthalmic optics—The Principal, Northampton Polytechnic Institute, St. John Street, E.C.1 (Aug. 30). An assistant lecturer and demonstrator in the British School of Malting and Brewing and department of the Biochemistry of Fermentation of the University of Birmingham—The Secretary, University, Birmingham (Aug. 31). Two chemists for the Meat Products Research Branch of the N.Z. Department of Scientific and Industrial Research, Wellington—The High Commissioner for New Zealand, 415 Strand, W.C.2 (Sept. 8). A chief assistant entomologist at the Rothamsted Experimental Station — The Secretary, Rothamsted Experimental Station, Harpenden, Herts (Sept. 15). A lecturer in biology at the Portsmouth Municipal College—The Secretary, Municipal College, Portsmouth. A head of the mechanical engineering department of the Darlington Technical College—The Chief Education Officer, Education Office, Darlington. A head of the Junior Technical School of the Borough Polytechnic Institute—The Principal, Borough Polytechnic Institute, Borough Road, S.E.1. A principal of the North-Western Polytechnic (now being erected)—The Clerk to the Governors, North-Western Polytechnic, 3 Temple Gardens, Temple, E.C.4. A laboratory assistant in the Department of Agriculture and Forests, Khartoum—The Controller, Sudan Government, London Office, Wellington House, Buckingham Gate, S.W.1.

Our Astronomical Column.

MAGNETIC STORMS AND SUNSPOTS.—Under the title "Large Magnetic Storms and Large Sunspots," in *Monthly Notices Royal Astron. Soc.*, May 1928, W. M. H. Greaves and H. W. Newton discuss the occurrence of sunspots at the time of magnetic storms for the 54 years 1874–1927. Magnetic disturbances are included for which the range in declination was at least 1°, or that in H.F. or V.F. at least 300 γ. Sunspots of mean area 500 millionths of the sun's hemisphere or greater are considered significant in a comparison with magnetic storms. The analysis shows that out of 60 magnetic storms, 36 commenced within 4 days of the central meridian passage of a large spot (chance would give about 17 coincidences between spot and storm); 8 other storms commenced within 4 days of the central meridian passage of a region of the sun which had previously been markedly disturbed; in 7 other cases the storm was followed one solar rotation later (about 27 days) by the transit of a large spot which had developed in the interval; the remaining 9 storms occurred when neither spots nor faculæ were unusual. When the largest magnetic storms were examined ($D \geq 1\frac{1}{2}°$ or H.F. or V.F. $\geq 500\,\gamma$), it was found that 15 out of 17 storms occurred in conjunction with a large spot; the sixteenth storm took place one solar rotation after the central meridian passage of a large spot, while the seventeenth storm preceded by one solar rotation the central meridian passage of another large spot (see NATURE, May 26, p. 842). These figures show that individual storms and individual spots are associated with each other more often than can be ascribed to chance, and that the tendency to association is greater for the largest storms.

Little evidence is found of a tendency for these magnetic storms to recur one solar rotation later. This is not necessarily in contradiction to Maunder, who found a definite tendency for magnetic disturbances to recur about 27 days later (*Monthly Notices R.A.S.*, pp. 19-22, etc.; 1904). The present authors have collected data for the period 1874–1927 relating to smaller storms (such as were included by Maunder in his analysis), and a discussion of this class of magnetic disturbance may show a more definite recurrence phenomenon.

SATURN'S SATELLITE HYPERION.—This satellite has attracted the special attention of dynamical astronomers owing to its large perturbations by Titan, and the fact that the mean motions of the two are nearly commensurable, in the ratio of 4 to 3. The *Annals of Leiden Observatory*, vol. 16, Part 3, contain a new investigation by J. Woltjer, Jun. He gives a revised theory, and a comparison with observations from 1875 to 1922; also tables for computing the motion as perturbed by Titan.

The discussion affords three different determinations of the mass of Titan, from the motions of (1) the argument of libration, (2) the longitude of peri-centre, (3) the node. The values of the reciprocal of the mass, compared with that of Saturn, are 3986, 4080, and 3767 respectively; combining these with values found by Brouwer, Eichelberger, and Samter, he adopts the weighted mean 4033. This makes the mass of Titan 1·9 times that of our moon, but its density is only about half that of the moon.

The comparison with observations brings out the superiority of the method of comparing one satellite with another, rather than with Saturn itself. The latter method was used up to 1887 and gave for the mean error of one observation values that ranged from $\frac{1}{2}''$ to $\frac{3}{4}''$; the other method was then introduced by Struve at Pulkovo and reduced the mean error of an observation to $\frac{1}{4}''$.