

to discontinue their second-hand department and in consequence are disposing of their second-hand stock, which includes a large and varied selection of microscopes and accessories and microscope preparations.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned :—A technical assistant at a Naval Experimental Establishment—The Secretary of the Admiralty (C.E. Branch), Whitehall, S.W.1 (Jan. 12). A head of the Department of Pharmacy in the Bradford Technical College—The Principal, Technical College, Bradford (Jan. 15). A lecturer in physics and electrical engineering at the Handsworth Technical College—The Chief Education Officer, Education Office, Council House, Birmingham (Jan. 19). A science master at the Lawrence Royal Military School, Sanawar, India—The Secretary to the High Commissioner for India (General Department), 42 Grosvenor Gardens, London, S.W.1 (Jan. 19). A lecturer in civil engineering and building trades work in the Engineering Department of the Portsmouth Municipal College—The Secretary, Municipal College, Portsmouth (Jan. 25). A junior scientific officer

under the Directorate of Scientific Research, Air Ministry, for research in applied physics, chiefly in connexion with aeronautical instruments—The Chief Superintendent, R.A.E., South Farnborough, Hants (Jan. 26). An investigator at the Mines Department Testing Station at Sheffield—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, S.W.1 (Jan. 28). A principal of the Government Technical School, Accra, Gold Coast—C.A. [T.], The Secretary, Board of Education, Whitehall, S.W.1. Scottish candidates—[T.], The Secretary, Scottish Education Department, Whitehall, S.W.1 (Jan. 28). An engineering assistant in the County Surveyor's Department of the Wilts County Council—The Clerk of the County Council, County Offices, Trowbridge (Jan. 28). A research assistant (botanical) and a research assistant (an entomologist) in the department of plant pathology of the Albert Agricultural College, University College, Dublin, for the investigation of virus diseases of plants—The Secretary, University College, Dublin (Jan. 31). A lecturer in physics in the University of Western Australia—The Agent-General for Western Australia, Savoy House, 115 Strand, W.C.2 (Jan. 31).

Our Astronomical Column.

ELONGATION OF MERCURY.—The easterly elongations of Mercury in spring are the most convenient and favourable of the year for observing this planet. They occur in 1929 on Jan. 22 and May 15, and the former will afford some excellent opportunities for viewing the planet from about Jan. 14 until Jan. 28. On Jan. 16 Mercury will set about 1¼ hr. after the sun, on Jan. 26 about 1½ hr. later. It will be brighter before the date of elongation than afterwards, so that observations should be attempted during the third week of the month. It will be moving in an easterly direction amongst the southern stars, but at the close of January will appear stationary in the western region of Aquarius.

The times of setting and apparent brilliancy of the planet will be as follow :

Mercury Sets (G.M.T.)	Apparent Stellar Lustre.	Mercury Sets (G.M.T.)	Apparent Stellar Lustre.
Jan. 14. 17 ^h 38 ^m	- 0.74	Jan. 22. 18 ^h 12 ^m	- 0.34
„ 16. 17 47	- 0.70	„ 24. 12 16	- 0.18
„ 18. 17 57	- 0.62	„ 26. 18 18	- 0.02
„ 20. 18 6	- 0.50		

The brightness of the planet will therefore exceed that of such stars as Vega and Arcturus, and with a clear sky there should be little difficulty in detecting it.

REAL AND FICTITIOUS METEOR RADIANTS.—V. A. Maltzev of Leningrad contributes a paper on this subject to *Astr. Nachr.*, 5604. He quotes Dr. C. P. Olivier as saying that he was prepared to find that half the radiants in his catalogue did not correspond with real meteor streams. The rule adopted was that a radiant needed at least four meteors on the same night passing through a circle 2° in diameter to establish it.

Experiments were made at Leningrad by letting pins fall at random on a horizontal board graduated to correspond with a region of the sky extending over 90° in right ascension and 75° in declination. The point of the pin denotes the direction of motion. It would seem that very accurate horizontality of the board is necessary, otherwise the pins have a tendency to roll about

their points. The conclusions drawn from the experiments are that more than half the published radiants are fictitious, and that more than 4 meteors through a 2° circle are required to establish a radiant. With a total of 100 meteors observed, it is considered that 11 meteors through a 2° circle are required. As the total number of meteors observed becomes less, the number required for a radiant slowly diminishes, being 8 when the total is 50, and 5 when it is 10. But 4 meteors will still suffice when the same radiant is confirmed by observations in other years on the same calendar date.

SAN LUIS CATALOGUE OF 15333 STARS.—The Carnegie Institution of Washington has just published this very useful catalogue. The late Prof. Lewis Boss felt the need of modern observations for many of the stars south of the equator in his Preliminary General Catalogue, and arranged that the Albany transit circle should be set up at San Luis, Argentina, so that the northern and southern observations should be obtained under as nearly as possible the same conditions, the observers being also the same. Prof. Tucker was in charge of the expedition, which worked so energetically that 87,000 observations were secured between April 1909 and January 1911. A series of photometric observations then commenced, which terminated in February 1913.

The reductions have been carried through with great care, the refractions being carefully studied. Stars were not observed both by reflection and directly at the same transit ; at Greenwich also it has been found advisable to abandon such double observations ; the second one being made in a hurry, after swinging the telescope through a large angle, was found to be subject to systematic errors. A comparison of both the Albany and San Luis catalogues with the P.G.C. shows that the two former agree very well with each other, but the systematic difference from the P.G.C. reaches 0.4" in the neighbourhood of 20° N. Decl. There are many faint stars in the catalogue, some of mag. 10.4. Their positions are given for 1910.0 ; there is no discussion of proper motions.