

Teil 1, 2 Hälfte, p. 1049; 1914), and there is also a reference to the matter in the article by Hilb and Riesz in Bd. 2, Teil 3, p. 1203 (1924). Prof. Carslaw's attention was directed to Wilbraham's paper by Prof. G. N. Watson.

A USEFUL statistical summary entitled the "Mineral Industry of the British Empire and Foreign Countries" has been compiled by the Imperial Institute (H.M. Stationery Office, 5s. 6d.). The volume includes statistics for 1927, 1928, and 1929, where available, for some fifty minerals. Under each heading are given the total production for each producing country, and the imports and exports for all countries. Minerals are arranged alphabetically. Quantities are given in tons, hundredweights, or pounds. The uniformity with which the statistics are given much facilitates use and comparison, and the volume should meet with wide acceptance. An appendix gives lists of statistical publications for each State.

A CATALOGUE (New Series, No. 24) of some 1400 second-hand works on natural history, classified under the headings of periodicals and publications of learned societies, zoology, botany, geology, mineralogy, mining, etc., astronomy, chemistry, etc., and Linnæana, has just been published by Messrs. Wheldon and Wesley, Ltd., 2 Arthur Street, W.C.2.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—

An assistant lecturer in the Department of Mathematics and Physics of the Polytechnic, Regent Street—The Director of Education, The Polytechnic, Regent Street, W.1 (Feb. 27). A forestry inspector under the Department of Agriculture of the Irish Free State—The Secretary, Civil Service Commission, 45 Upper O'Connell Street, Dublin, C.8 (Feb. 27). A lecturer in pathology in the Department of Pathology and Bacteriology of the University of Leeds—The Registrar, The University, Leeds (Mar. 2). A male senior lecturer in the Department of Education of King's College, London—The Secretary, King's College, Strand, W.C.2 (Mar. 6). A chief designer in the Design Office of the Department of Technical Education of the Egyptian Ministry of Education—The Under-Secretary of State, Ministry of Education, Cairo, Egypt (Mar. 9). A full-time teacher in the Department of Chemistry of the West Ham Municipal College—The Principal, West Ham Municipal College, Stratford, E.15 (Mar. 14). A temporary hydrologist and a temporary biologist under the Ministry of Agriculture and Fisheries, for research work in connexion with the survey of new fishing grounds by H.M.S. *Challenger*—The Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1 (June 1).

ERRATUM.—NATURE, Feb. 14, p. 237, col. 2, line 3, for "raise the temperature" read "lower the melting-point".

Our Astronomical Column.

Bright Meteor Photographed.—The *Journal* of the B.A.A. for January contains a reproduction of an interesting photograph of a bright meteor, obtained on Sept. 19, 1930, by E. H. Collinson at Ipswich. The meteor was observed visually by Mr. J. P. M. Prentice at Stowmarket. From a combination of the two, Mr. A. King has deduced the path of the meteor; the speed came out 24 m.p.s., which is 3 m.p.s. less than the parabolic speed. The luminous flight began at a height of 79 miles, and ended at one of 54 miles. The photograph indicates three explosions; after each of them the track on the plate suddenly widened, and then gradually grew narrow again; the calculated heights at the explosions are $68\frac{1}{2}$, 61, and 58 miles respectively. The path produced ended in the sea, 16 miles south-east of Brightlingsea. The inclination of the path was 52° , and the perihelion distance 0.34 unit. The motion was inward. Most meteor photographs have been obtained accidentally on plates exposed for other purposes; but Mr. Collinson uses a specially constructed automatic camera for the purpose of securing them; he is to be congratulated on this fine result.

Pluto.—M. Mineur, assistant at the Paris Observatory, contributes an article on Pluto to *L'Astronomie* for December, in which he directs attention to the two remarkable relations between the orbits of Pluto and Neptune:

(1) Their periods are almost exactly in the ratio 3 to 2. This relation may be rendered quite exact when the period of Pluto is known with great accuracy.

(2) They have very nearly a common line of apsides, the perihelion of Pluto being in longitude $223^\circ 14.6'$, and the aphelion of Neptune $224^\circ 1.1'$, both for the equinox of 1930.0.

If they were simultaneously on the apse-line, there would be a type of regular periodic motion, but this

is not actually the case. It is interesting to note that in the two other pairs of interlocking orbits with which we are acquainted, satellites VI. and VII. of Jupiter, and satellites VIII. and IX. of Jupiter, the apojoves of each pair are roughly opposite to each other. It is difficult to think that the relationship can be permanent in the case of Neptune and Pluto, as the perturbations that they undergo from the other planets must be decidedly different.

Nakamura's Comet.—*Bulletin* No. 183 of the Kwasan Observatory, Kyoto, gives some more particulars about this comet. It was discovered photographically on Nov. 13 on plates taken with the 11 cm. triplet lens, and was then of magnitude 13.5. Mr. Nakamura observed it visually on Nov. 16, noting that it appeared fairly sharp and somewhat elongated. The following photographic positions are given, presumably for the equinox of 1930.0:

	R.A.	N. Decl.
1930 Nov. 13. 57635 U.T.	$3^h 40^m 41.44^s$	$18^\circ 53' 25.4''$
14. 51980	$3 37 52.69$	$18 41 1.0$
15. 56116	$3 34 51.86$	$18 28 12.5$

The parabolic elements deduced from these by Mr. Y. Sibata were telegraphed to Europe, and have already been published in NATURE.

The seconds of R.A. on Nov. 13 were printed as 14 in the circular, but it is fairly evident, both by comparison with the telegraphed position and by differencing from the ephemeris, that 41 is correct.

This comet must have faded very rapidly, as Prof. G. van Biesbroeck made a careful search at Yerkes Observatory after receiving the telegram, but could not find it.

Kwasan Circ., 181, notes that a 25 cm. photographic reflector, focal length 95 cm., has been installed at Kwasan for photographing comets and asteroids.