

Birmingham (Aug. 21). Principal teachers of, respectively, mechanical engineering, mathematics and physics, and chemistry; also a qualified mechanic for taking care of the plant, and a laboratory steward to take charge of the laboratories at the Technical College, Coatbridge—The Director of Education, Lanarkshire House, 191 Ingram Street, Glasgow, C.1 (Aug. 22). A junior assistant in the department of the War Department Chemist—The War Department Chemist, B.47, Royal Arsenal, Woolwich, S.E.18 (Aug. 23). A lecturer and demonstrator in the pharmacy department of the Birmingham Central Technical College—The Principal, Central Technical College, Suffolk Street, Birmingham (Aug. 25). A cacao soil research chemist at the Imperial College of Tropical Agriculture, Trinidad—The Secretary, Imperial College of Tropical Agriculture, 14 Trinity Square, E.C.3 (Aug. 30). A lecturer in mechanical engineering at the Norwich Technical College—The Principal, Technical College, Norwich (Sept. 3). An assistant in the Cancer Research Laboratories of the University of Manchester—The Registrar, The University, Manchester (Sept. 7). A demonstrator in chemical pathology in the University of Manchester—The Registrar, The University, Manchester (Sept. 13). A medical man or woman research worker

in mental deficiency under the Medical Research Council, the governing body of the Darwin Trust, and the Committee of the Royal Eastern Counties Institution for the Mentally Defective at Colchester—The Medical Superintendent, Royal Institution, Colchester (Oct. 3). A chemical laboratory assistant in the experimental department of the Fine Cotton Spinners' and Doublers' Association, Ltd.—Prof. F. P. Slater, Rock Bank, Bollington, Macclesfield. Assistant masters for engineering subjects and for chemistry at the Smethwick Junior Technical School—The Director of Education, Education Offices, High Street, Smethwick. An assistant under the Directorate of Ballistic Research, Research Department, Woolwich, with several years' research experience in physics—The Chief Superintendent, Research Department, Woolwich, S.E.18. A temporary research assistant in a Government Department, with, preferably, a knowledge of rubber technique and mechanical methods—The Chief Superintendent, Chemical Warfare Research Department, 14 Grosvenor Gardens, S.W.1. A temporary laboratory assistant in a Government Department, with, if possible, a general knowledge of chemistry and physics and of rubber manufacture—The Commandant, Experimental Station, Porton, near Salisbury.

### Our Astronomical Column.

**New Variable Stars in the Constellation Norma.**—Arrangements have been made for the interchange of observers between the observatories of Johannesburg and Leyden. Mr. H. van Gent has taken a number of plates with the Franklin-Adams telescope at Johannesburg which were measured at Leyden by W. E. Kruytbosch (*Bull. Astr. Instit. Netherlands*, vol. 5, No. 194). The blink-microscope revealed 25 variables upon them, and afforded sufficient material for plotting the light-curves, which are given in the *Bulletin* together with diagrams of the fields. The second star on the list is an eclipsing variable of the W. Urs. Maj. type. Prof. Hertzprung suggests, from the long stationary minimum, that either the companion is a white dwarf or that the system contains a third star from which most of the light comes during minimum. There are also some Cepheid variables:  $p$  on the list has a period of 2.4 days and a large light-range.

**Images of Pluto on Yerkes Observatory Plates.**—*Astr. Nach.* 5719 contains particulars of the measures of the image of Pluto, detected by Dr. F. E. Ross on plates exposed on Jan. 29, 1921 (two plates) and Jan. 6, 1927. The positions are for the equinox of 1930.0. The magnitude of Pluto was estimated as 15 on each date.

U.T.	R.A.	N. Decl.	Aperture.	Focal Length.	Exposure.
1921.			(Inches.)	(Inches.)	(Minutes.)
Jan. 29-0896	6 <sup>h</sup> 31 <sup>m</sup> 22-04 <sup>s</sup>	19° 43' 13-7"	10	50	192
	22-01	13-6			
	22-28	14-1	6	30	192
1927.					
Jan. 6-2500	7 4 3-17	21 13 3-1	3	21	120

The estimated probable error is 1" for the focal lengths 30 in. and 21 in., somewhat less for the 50-in. focus. The first 50-in. measure and the 30-in. measure were made by Prof. van Biesbroeck using

three comparison stars in the Paris Astrographic Catalogue. The other measures were made by Dr. F. E. Ross using the star Berlin A 2257 for the 1921 plate, and three Paris Astrographic stars for the 1927 plate. No proper motions were applied. The 1927 position is in good accord with the revised measures of the image obtained at Uccle on Jan. 27, 1927. It is stated that the 1921 images were identified with the aid of the ephemeris of Prof. T. Banachiewicz (*U. A. I. Circular* 284), and the 1927 one with the aid of a manuscript ephemeris by Messrs. Bower and Whipple.

*Astr. Nach.* 5719 also contains a useful collection of the observations of Pluto obtained in March and April last: they are compared by Dr. C. H. Smiley with an ephemeris which he deduced from the following heliocentric positions and velocities derived by Prof. Banachiewicz for the date March 31.0 and the equinox of 1930.0.

Daily Change.	
$x = -13.29363$	$-0.0020443$
$y = +35.84738$	$-0.0017048$
$z = +15.41587$	$+0.0000824$

**The Photo-electric Cell at Berlin-Babelsberg.**—*Astr. Nach.* 5713 contains a study by P. Guthnick and R. Prager of early-type stars, the duplicity of which had been detected at the Victoria Observatory by spectroscopic observations by Dr. Plaskett and Dr. Pearce. In five cases light-variation was detected, indicating mutual eclipses. *H.D.* 19820 has minimum masses of 19 and 9 times that of the sun. It is of type O8, but its colour is yellow: the other stars on the list are also yellow. *H.D.* 25638 has a period of 1.1487 days from the Berlin observations. Plaskett found a velocity range of 293 km./sec., but did not determine the period. *H.D.* 25639 is also an eclipsing binary, only 18" from the preceding star, with which it forms the pair  $\Sigma 485$ , but the light range is only 0.05 mag. The period is not yet determined.