

some of the results of this inquiry was included in the article on "The Migration of British Swallows" in *NATURE* of March 16.

THE Ministry of Agriculture announces that bees can now be examined for the presence of the Acarine Disease on payment of a fee of 2s. for each sample submitted. Live bees only must be sent, and about 30 specimens should be taken from off the combs and packed in a small cage or box provided with ventilation-holes. A piece of muslin should be fastened across the inside for the bees to cling to during transit. A supply of candy sufficient to last for a few days, or a lump of sugar moistened with water, should be wrapped in muslin and fastened firmly to the inside of the box. The latter should be addressed to the Ministry of Agriculture, 4 Whitehall Place, London, S.W.1, and the name of the sender should be written on the reverse side of the label, but crossed through to prevent an error in transit. The remittance should be sent under a separate covering letter with as much information as possible concerning the bees. Payment must be made by postal order or cheque.

ON March 22 at a meeting of the Institution of Aeronautical Engineers a paper was read by Mr. Manning on "Seaplane Design," and on March 31 Mr. H. P. Folland dealt with the subject of aircraft design generally. The programme of future fixtures

includes papers by Captain Sayers on "Some Unsettled Problems of Aeroplane Design" and by Major Hume on "The Seaplane's Place in Aviation." Visits have been arranged to the works of the De Haviland Aircraft Company, Simms Motor Units Ltd., the National Physical Laboratory, the South Kensington Museum, and the Croydon Aerodrome. The secretary is Mr. L. Howard Flanders, 60 Chancery Lane, and the president, Col. J. T. C. Moore-Brabazon, M.P.

WE have received from Messrs. Baird and Tatlock, of Cross Street, Hatton Garden, a copy of their new (1922) catalogue of apparatus for use in physiological and other laboratories where similar apparatus is required. The worker will find it a very valuable and an almost complete list of the instruments at present available for teaching and research purposes. In the latter case, it frequently happens that new apparatus has to be designed and fitted up to solve new problems; but the list sent to us will be of much assistance in giving information of what is actually to be obtained for the purpose in view. We note that the collaboration of physiologists has been obtained in the selection of the material to be included and the presence of apparatus for physico-chemical measurements is to be welcomed. The instruments for convenient measurement of electrical conductivity and potential have been somewhat difficult to obtain in recent years in England. The prices on the whole appear to be reasonable.

Our Astronomical Column.

THE SHOWER OF LYRIDS.—These meteors may be expected to return on the night of April 21, and as the moon will be absent this year at the time of the maximum display, they should be well observed. The best hour at which to witness the event will probably be near midnight, for in the morning hours on April 22 the earth is likely to have passed through the denser part of the stream. The shower certainly lasts ten days, but it appears in its most active stage for a short period only. Of late years the meteors of this system have not been visible in striking abundance, and it is an unfortunate circumstance that its period of revolution is unknown. A brilliant exhibition of the meteors may occur in any year, and quite unexpectedly as in 1803 and 1851.

THE POSITION OF NEPTUNE'S EQUATOR.—It has long been known that the plane of the orbit of Neptune's satellite Triton is changing its position. The only probable cause is the oblateness of Neptune, and it follows that the orbit plane makes a considerable angle with the planet's equator. By plotting out the poles of the satellite's orbit at different epochs we get an arc of a small circle, the centre of which is the pole of Neptune's equator. The latest determination of the position of the latter pole is that made by Mr. Arthur Newton (*Pop. Ast.*, March 1922). Making use of 1500 observations of the satellite, made from 1864 to 1908, he gives R.A. 19 h. 17 m., N. Decl. $38^{\circ}.3$ as the northern end of Neptune's axis. The pole of the satellite's orbit describes a circle round this, of radius $14^{\circ}.7$, in 425 years. There is little doubt that Neptune's rotation is retrograde; this has been verified for Uranus by the spectroscope, the period of $10\frac{1}{2}$ h. being found at the same time. In the case of Uranus the equator evidently coincides with the orbit

planes, since these are all practically coincident and no change in them has been detected.

DETERMINATION OF STAR MAGNITUDES BY A THERMOPILE.—J. Schilt has devised a new method of determining photographic star-magnitudes, which he describes in Bull. No. 10 of the *Astr. Inst. of the Netherlands*. The light and heat from a lamp are focussed by a lens on a small circle of the plate, which is somewhat larger than any of the star-images; these images are then moved in succession into the circle of light, and the amount of heat absorbed by the image is measured by the galvanometer of the thermopile. The process is rapid, the equilibrium temperature being attained in three seconds. The probable error, deduced by comparing the measures of two exposures on the same plate, is found to be 0.02 mag., whereas that from the method of diameter of image is 0.11 mag.

The most striking advantage of the new method is that it gets rid of practically all error due to variation in the shape of the image with varying distance from the centre of the plate. It also gets rid of the error that arises in the star diameters in plates taken with a refractor, due to the chromatic aberration which depends on the star's colour. In fact the method appears to give the integrated amount of darkening of the film independently of the size or shape of the image. This is verified by the application of the method to some of the polar plates taken with the 60-inch reflector at Mt. Wilson. The tables show that it gives good results up to a distance of 44 mm. from the centre of the plate, whereas Seares had found that the diameter method needed corrections of about half a magnitude at a distance of only 20 mm. The method would seem to have a large field of usefulness in the photometry of faint stars on reflector plates.