BIBLIOGRAPHY of meteorological literature, No. 4, has recently been issued by the Royal Meteorological Society, having been prepared with the collaboration of the Meteorological Office. It deals with all meteorological publications and articles on meteorology recently received, giving the titles and references where the literature is to be found. The division of the subject-matter under specified heads enables a would-be student to determine the helpful line of reading which he is desirous of prosecuting, without loss of time. Divisions are given for the several meteorological elements, such as atmospheric pressure, temperature, solar radiation, aqueous vapour and cloud, rain, wind, storms, and weather forecasting, with other allied subjects.

WE have received a copy of the Report of the Proceedings of the Natural History Society of Bishop Stortford College for 1922. It is the first report published by the Society, and contains a list of the plants found in the district during the years 1920–1922, an account of the more interesting Lepidoptera occurring during 1922, and a note on the birds of the year. A list of the more important additions to the school museum during the year and a general account of the activities of the Society, especially in the maintenance of vivaria and aquaria, are added. The successful attempt to induce the viper to breed in captivity is a notable achievement. The Society can be congratulated on having got together a nucleus of enthusiastic and active workers, and we hope the publication of this report will stimulate its members to increased and more sustained work on the fauna and flora of the district.

WE have received from Messrs. Watson and Sons, Bulletin 29 S. on diathermy apparatus. The introductory remarks are reprinted from an article by Dr. E. P. Cumberbatch, who has made important contributions to this subject. This foreword explains clearly the methods which are necessary for the production of sustained oscillations of the right frequency for the purposes in view, and also gives some account of the surgical and medical uses to which the diathermy currents can be put. The early designs of the instrument have been much improved so as to allow a large output of these currents, and the spark gap, which has often proved the weakest feature of the instruments, is now run in an atmosphere of coal gas; if this is not available, petrol or acetone may be used. The bulletin is illustrated by various parts of these machines and by a great variety of electrodes for the various cavities of the body.

THE Cambridge University Press announces the forthcoming publication of "The Archæology of the Cambridge Region," by C. Fox, which will form a topographical study of the bronze, early iron, Roman, and Anglo-Saxon ages, with an introductory note on the neolithic age. The object of the work is to provide a basis for future detailed study, period by period, of the archæological remains of the district and of the many problems connected with them.

Our Astronomical Column.

PHOTOGRAPHIC MAGNITUDES OF SATELLITES OF JUPITER.—Mr. Seth B. Nicholson has made a careful study by photography of the magnitudes of the eighth and ninth satellites of Jupiter. Reduced to mean opposition they are 17·6 mag. and 18·6 mag. respectively. Assuming albedoes similar to that of Jupiter III (Ganymede), the diameters are about 30 miles and 20 miles.

PERTURBATIONS BY THE METHOD OF QUADRATURES.—In 1908, Dr. P. H. Cowell introduced the method of following the perturbed motion of a planet or comet by calculating the forces acting in three directions mutually at right angles, and so obtaining the second differences of the x, y, z co-ordinates of the body; being given the initial values, the successive ones are then formed by addition of the differences.

Mr. B. V. Noumeroff has lately improved the method in a paper in vol. ii. of Publications de l'Observatoire Astrophysique de Russie. Mr. Commendantoff contributes a paper to *Astr. Nach.*, No. 5249, explaining the method and applying it to form positions of Ceres from 1913 to the present time. The Nautical Almanac has discontinued its ephemeris of the four bright asteroids, and since then regular ephemerides have not been available.

The point of the method is the use of new co-ordinates formed from x, y, z by multiplying them by a factor so chosen that the differences between the second and the sixth disappear, which greatly simplifies the calculation. The first approximation, using Jupiter perturbations only, at 40-day intervals, represents the place of Ceres for ten years with no error exceeding 15 seconds of time, which is sufficient for a finding ephemeris; it is further shown how the calculated co-ordinates may be improved when later observations are available. The method appears to be worthy of careful study.

STUDIES IN STELLAR MASSES.—Many recent studies in this field have been mentioned in this column. Dr. E. Hertzsprung contributes another to Bulletin No. 43, Astron. Instit. of Netherlands. He classifies 14 pairs of known orbit elements and parallax; they include the interferometer results for Capella and the eclipsing variable β Aurigæ; the mass of each component is deduced and the logarithm of the mass plotted against the quantity $m+5\log p$, where m and p are the apparent magnitude and parallax respectively. The graph connecting the two is nearly linear, showing a close correlation between mass and absolute magnitude, a result reached by other investigators. An expression using first and second powers of log mass is preferred, as it gives a better fit; it is noted that the formula fits well for the sun.

A table is given enabling the parallax to be deduced when the magnitudes and orbit elements are known. The star ζ Orionis is discussed. This star has a motion in position angle of 1° in 9 years, but the arc described is too short for finding an orbit. Jackson found the hypothetical parallax 0·016″ assuming a mass double that of the sun. The parallax found from the new formula is 0·0038″, which is regarded as more trustworthy. It agrees well with other estimates of the distance of the Orion group.

Dr. Hertzsprung appeals to parallax observers to pay special attention to stars the orbit elements of which are either known or are likely to be determinable before long.