THE ASTRONOMICAL AND ASTROPHYSICAL SOCIETY OF AMERICA.¹

ORIGINATING on the occasion of the formal opening of the Yerkes Observatory in October, 1897, the Astronomical and Astrophysical Society of America now includes in its membership most of the workers in astronomy and allied subjects throughout the Western Continent, and many from other countries. Inaugurated for the purpose of advancing astronomy and astrophysics, its system has been to hold an annual meeting of the nature of a conference, lasting for several days, generally at a different location each year. Accounts of the meetings, with abstracts of the various papers presented, have been published from year to year either in *The Astrophysical Journal* or in *Science*. At the tenth annual meeting, held at Yerkes, August, 1907, the publication of the present volume of proceedings was authorised, and its preparation entrusted to Prof. W. J. Hussey, of the Detroit Observatory at Ann Arbor, Michigan. It contains full particulars of the organisation of the society, and abstracts of the papers presented at all the meetings; the majority of these are now well known, and being only short summaries are not suitable for further abstraction.

The society undertakes the organisation of special branches of astronomical investigation, in a similar manner to the various sections of the British Astronomical Association. One of the most important of these deals with the collection of data referring to meteors, and it has strongly recommended the establishment of a network of photographic stations about one hundred miles apart for the purpose of obtaining a record as complete as possible of all the meteors appearing within the network. Automatic instruments of as simple and inexpensive type as can be obtained are recommended.

Another section deals with cometary phenomena, and the society financed a special expedition to Honolulu for the photographic recording of Halley's Comet in May, 1910, in charge of F. Ellerman, of the Mount Wilson Observatory.

In a report of progress on the radial velocity determinations at the Lick Observatory, W. W. Campbell mentions that the programmes of observation for the Mills spectrograph attached to the 36-inch equatorial, and for the D. O. Mills expedition to Santiago, Chile, have aimed to secure at least four spectrograms of every star down to 5.0 visual magnitude, with three-prism dispersion if possible, and of fainter stars with two-prism dispersion. Up to June 1, 1907, three-prism spectrograms of 882 stars had been obtained at Mount Hamilton. It was expected that the programme would be completed by June, 1910. On the D. O. Mills expeditions Messrs. Wright and Curtis have obtained 530 stars brighter than 5.01 visual magnitude, and 150 stars fainter than 5.00 magnitude. The total number of separate stars the spectra of which have been photographed is 1368. Many new spectroscopic binaries have been discovered during the progress of the reductions, but it has only been possible to investigate fully the orbits of a few of the total number now known.

CHARLES P. BUTLER.

COAST-SURVEYING.²

IN surveying, uniformity of method may be carried to a point at which it militates against maximum efficiency, which demands that each region should be surveyed by the method most suited to its character and the object in view. While a uniform method of operations facilitates the compilation of results, a reasonable adaptation of method to the case in hand distinguishes a scientific survey from a mechanical process of measurement.

Dr. Ball has been engaged for several seasons in surveying the eastern desert of Egypt, including both the mining area and the Red Sea coast, carrying on a triangulation of approximately second-order and a plane-table topographical survey at the same time. In aiming at the greatest economy of time, together with adequate accuracy, he has

employed the method described in this paper along the coast of the Red Sea. Having fixed by triangulation a series of points on moderately high ground overlooking the coastal plain, he determines a series of points on the sea-margin by observing their directions and the depression-angles with a theodolite. Thus the azimuths of the lines are obtained from that of a side of the triangulation, and the determined altitude of the observation point furnishes, with the depression-angle, the distance of the sea-margin. So far the method is not new; but the computations involved are troublesome, and this has prevented the more general use of it.

To surmount this difficulty Dr. Ball uses a scale, to be specially constructed by the surveyor for each station occupied, such that when the apparent angle of depression to a point on the coast is observed the scale will enable the true distance of the point from the station to be at once laid down on the chart. The height of the station being accurately known from the triangulation, the distances corresponding to the different depression-angles can be computed for each 5' and laid off to scale without any great expenditure of time. When a large extent of coastline is to be mapped on a single scale, and numerous stations will be occupied, it will be more economical to construct a single-scale diagram, from which any desired scale can be taken; instances of such a diagram for both metric and British units are given.

This method should greatly facilitate the work of a surveyor engaged on a coast survey who thoroughly understands the use of his theodolite and is possessed of adequate neatness and accuracy in drawing. The accuracy of the method is fully discussed, and the limits of distance for which it can be employed are investigated on the assumption that distances shall be correct to within 100 metres, while the altitude of the station is not more than 1 metre in error, the error of depression-angle does not exceed 10", and the coefficient of refraction is liable to a variation not exceeding 20 per cent. of itself. This study was undertaken by Mr. H. E. Hurst, of the Survey Department, and the whole memoir forms a very thorough piece of work and an instructive addition to field-surveying.

H. G. L.

WORK OF A LONDON NATURAL HISTORY SOCIETY.¹

THE South London Entomological and Natural History Society has existed since 1872, and now numbers 169 members, many of whom are among the most prominent entomologists of the day. The volume of publications before us is well printed and illustrated, and as it is not likely to be so widely circulated as it deserves, it may be well to give a detailed list of the various interesting papers included in it.

Robert Adkin, "On the Lepidoptera of a London Garden." Discusses the conversion of the country village of Lewisham into a suburban district, and the results of thirty years' experience of what was, entomologically, an actually barren plot of ground when laid out as a garden. During this time, about 180 species of butterflies and moths, out of the British list of about 2000, were obtained, of which eleven were butterflies. Among these is *Celastrina argiolus*, which appears to have been common at Lewisham in Stainton's time, and is still a common garden insect at Chiswick, in quite a different part of London. No great rarities are enumerated, but this was perhaps hardly to be expected; on the other hand, a large number of species are mentioned as having been only taken or observed *once*.

Robert Adkin, "Notes on *Hepialus humuli* and its Shetland forms." The writer considers that the form *thulensis* is restricted to Shetland. Alfred Sich, "Larval Legs." Deals with their development in certain Lepidoptera. H. J. Turner, "A few days with the butterflies of Zermatt." Account of a collecting tour. Alfred Sich, "The Middlesex home of *Clausilia biplicata*." Notes on the former occurrence of this and other land-shells in a locality

¹ Publications of the Astronomical and Astrophysical Society of America. Vol. i.—Organisation, Membership, and Abstracts of Papers, 1897-1903. Pp. xxvii+347. (Ann Arbor, Michigan: The Society, 1910.)

² "A New Method of Coast-surveying." By Dr. J. Ball. Survey Department Paper, No. 21. (Cairo, 1911.)

¹ Proceedings of the South London Entomological and Natural History Society, 1910-11. With nine plates. Pp. xvi+175. (London: The Society, Hibernia Chambers, London Bridge, S.E., n.d.) Price 4s. 6d.