

26. COMMISSION DES ÉTOILES DOUBLES.

PRESIDENT—Dr. R. G. Aitken, Acting-Director, Lick Observatory, Mount Hamilton, California, U.S.A.

MEMBERS—MM. G. Abetti, Bigourdan, Comstock, Doberck, Espin, Fox, Hertzsprung, Hussey, Innes, Jackson, Van Biesbroeck.

The present report is concerned chiefly with the progress made since May, 1922. At the meeting in Rome eight resolutions or recommendations were presented by the Commission and accepted by the Union. These will be considered in order.

1. *Central Office.*—It was decided that the central office for all matters relating to double star astronomy should be located, for the present, at the Lick Observatory. Active correspondence has been maintained by the Office with double star observers; lists of stars needing measurement have, by request, been sent to seven observers in Europe and America; data for the determination of orbits have been supplied to four astronomers; and data for statistical or other researches to three astronomers. Nine observers have sent in lists of measures in advance of their publication. The work done at the Office on the General Catalogue of Double Stars is described under (8). The question should be considered of establishing a sub-office in the Southern Hemisphere, say at the Union Observatory, Johannesburg, to care for all double stars south of -19° .

2. *Definitions and Symbols.*

3. *Observations.* There is nothing to add to these recommendations at this time, except to request that computers of orbits follow the notation given under (2) and accepted by the Committee on Notation at the Rome meeting.

4. *Personal Equation.*—No information has been received to indicate that the programme suggested under this head has been adopted by double star observers. A list of stars for observation was sent to all members of the Commission and to other active observers, but it is doubtful whether many observations have been made. It is now recommended that the whole subject be reopened and carefully considered at the Cambridge meeting, the resolutions contained in the last report being taken as a basis for discussion.

5. *Measures to Supplement Micrometer Observations.*—Programmes for the photographic measurement of double stars, along the lines followed by Hertzsprung and others at Potsdam and Leiden, have been taken up at the Sproul and McCormick Observatories, and also at the Union Observatory, Johannesburg. At the first two of these observatories and at others parallax plates have been examined, new double stars thus discovered, and new and known pairs measured. Photography should play a larger part in the future in double star work, even in the measurement of the relatively close pairs ($2''$ to $5''$) which are not too unequal in the magnitude of their components, and it should largely supersede micrometric measurement of wider pairs for proper motion and relative mass determinations.

Experiments with the interferometer at the Lick and at the Yerkes Observatories have not yet resulted in overcoming all the difficulties in the way of accurate measures of double stars. Further experiments are in progress. Professor Maggini at Catania has apparently been more successful, for he has published several lists of measures of close double stars made with the interferometer attached to 12-inch telescope of the Catania Observatory.

6. *Co-operation.*—Nothing need be said in addition to the statements under (1) above, except that the Central Office will gladly promote co-operation in every possible way.

7. *Publication of Measures.*—A number of important series of measures of double stars have been published since May, 1922. In general, they have been well arranged, and have given the essential data. But in giving the co-ordinates of position, different epochs have been used, and this has occasioned considerable unnecessary work in entering the measures upon the card catalogue, especially when the numbers in the Burnham's General Catalogue or in Jonckheere's Catalogue have not been given. It is recommended that in future publications the star places be given for the epoch 1950.0, since that epoch will be adopted for the Extension to the General Catalogue.

8. *General Catalogues.*—The card catalogue of double stars at the central office has been brought fully up to date so far as the entry of measures and of orbit elements is concerned. Some progress has been made in bringing forward the star places to 1950 and in entering the photometric magnitudes and spectral classes from the Henry Draper Catalogue. The B. D. number for a considerable percentage of stars has also been entered. Work along these lines is being continued, and it is expected that it will be completed before the close of 1925.

Part of the sum of 6,000 francs appropriated by the I.A.U. in support of the Central Office during the three-year period beginning in May, 1922, has been expended on the work just outlined. The balance still available will be spent in the next six months.

Plans have been formulated for the preparation of printer's copy, and there is some reason to think that funds may become available to print the catalogue in the year 1927. If this hope is realised it is intended to include in the volume (or volumes) all data printed before the close of 1926.

Innes's New Reference Catalogue of Southern Double Stars has been ready in manuscript form for several years, and publication has been delayed simply to permit complete comparison with the Henry Draper Catalogue. It is hoped that this valuable work will appear during the year 1925.

In closing, special attention may be called to the prospects for greatly increased activity in double star work in the southern hemisphere. During the past two or three years the only active observers in that field have been Innes and Dawson. Innes's telescope has been but a small one, but the large refractor for the Union Observatory will be in active use before the date of the Cambridge meeting. An arrangement has been made under which observers from Leiden will go to Johannesburg to take part in the observing work; in fact, Hertzprung has been there for a number of months. Members of the regular staff of the observatory, in exchange, will go to Leiden for advanced study and research. It is understood that Mr. W. H. Van den Bos, who has done excellent double star work at Leiden, will go to Johannesburg for similar work as soon as the new telescope is ready.

The Lamont Telescope of the Detroit Observatory is also nearly completed. Professor Hussey has already selected a site at or near Bloemfontein in South Africa, and will install the telescope there personally, and use it in double star work.

At the meeting of the Union in 1928 it should be possible to report valuable observations by both of these modern telescopes.

For the Committee,

R. G. AITKEN,
Chairman.

January 25, 1925.