CURRENT PROGRESS WITH THE DOUBLE STAR CATALOGUES

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ABSTRACT

Current progress on the visual double star Index and Observation Catalogues is discussed. In addition, a new edition of the visual binary orbit catalogue is being prepared.

A new tape edition of the Index Catalogue is being prepared to replace the previous tape version called the "Index Catalogue, 1976.5". In the last two years, the entire Index Catalogue has been examined and purged of all cases where a star was called double without any supporting evidence. The several thousand such cases are being maintained in a separate file labelled "stars suspected of duplicity". Many other corrections have been made, and the preliminary version of the new tape contains about 73100 objects. After correction of some ordering problems, work will begin on the final version. We hope to be able to provide updated information concerning the motion, interval of observation, and total number of observations for each object. While much of this can be accomplished by computer, human judgement will still have to intervene in a substantial fraction of the work. In the next tape version (1987?), we hope to be able to provide updated magnitudes and spectral types, but this is not a trivial problem.

Since 1973 work has been underway to extend the data in the Observation Catalogue back to the earliest double star data of useable quality, or, approximately, to 1825. This task is virtually completed for the very abundant post-1900 measures, about 80% complete for the 1880-1900 interval, and perhaps 50% finished for the earlier data, leading to an overall completion of about 85%. All major observers have now been included, with the exception of Otto Struve, whose measures require a considerable amount of editorial work. At the moment, approximately 145,000 cards have been punched, and completion of this project should not take

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longer than another few years. We will then have a complete, machine-readable data base extending for more than 150 years. Plans are also afoot to transfer both the Index and Observation Catalogues to disk storage, which will permit more rapid access to the data for the purposes of interrogation, correction, and updating.

Eighteen years ago the writer published a catalogue of visual binary orbits, and in 1970 its successor, the Finsen-Worley Catalogue, was published. Computation of new orbits, as well as revisions of old ones, appear to require a new orbit catalogue about every decade; hence a new one is under construction jointly with W. D. Heintz. This catalogue will contain orbits for about 800 visual binaries. Each orbit is being evaluated critically and independently by us, using the extensive data already present in the Observation Catalogue. In nearly every case, we find ourselves in good agreement on the quality rating to be assigned. The catalogue also will contain a brief "for-the-record" list of orbits rejected from the main body of data. These comprise cases where the original computation was seriously erroneous, as well as unconfirmed astrometric pairs. Because of the rapid spread of hand and desk-top computers, we plan to drop the listing of Thiele-Innes elements. Data on MK spectral types and photoelectric magnitudes will be provided by the National Space Science Data Center through the courtesy of W. H. Warren. We anticipate publication of the catalogue within the year.