

*Micrometrical Measures of 120 Double or Multiple Stars, taken at the Honourable East India Company's Observatory at Madras in the years 1856-58.* By Captain W. S. Jacob, Director of the Madras Observatory.

The measures contained in this paper may be considered as a continuation of those given in the last volume of Madras results for 1848-52, having been made with the same instrument, viz., the equatoreal of 6.3 inches aperture, constructed for the author by Lerebours and Secretan of Paris.

The stars selected have been chiefly such as were either suspected or known to be binaries, or such as seemed likely to give indications of parallax, or as for some other reason seemed to require watching, no attempt having been made to detect new ones. Three such were, however, picked up accidentally; one (B.A.C. 2170) in observing an occultation by the moon, when the star disappeared at two distinct instants, the others are  $\tau^4$  *Eridani*, which has a close companion as well as the distant one mentioned in Smyth's *Cycle*, and a small very close pair in  $9^h 22^m, 118^\circ 11'$ .

The following are a few extracts from a series of notes which the author has appended to his Catalogue:—

“ 539,  $\zeta$  *Cancri*. A, B seems to have an orbit nearly circular with a period of about 110 years. The movement of A, C appears to be about  $-0^\circ.5$  per annum, but is somewhat irregular; perhaps the proximity of B to A may give rise to a bias in measuring; there must also be perturbations arising from the mutual action of the three bodies, even should there be no other disturbing force.

“  $\xi$  *Ursæ Majoris*. The large errors exhibited by the observations of this star, when compared with any elliptical hypothesis, seem to suggest perturbation. Sir John Herschel remarks (*Mem. Ast. Soc.* Vol. V.), that the two halves of the orbit seem to belong to different ellipses, which implies the same suspicion.

“ 563,  $\alpha$  *Centauri*. Although this pair has gone through more than a whole revolution since its discovery, and has been carefully watched by myself through nearly  $100^\circ$  of its course, the elements of the true orbit are still in some uncertainty. There is evidently some disturbing force causing a sensible deviation from elliptic motion, as has been already pointed out by me in the *Monthly Notices* for March' 1856, and the apparent path still continues to differ little from a straight line. The area annually described by the radius vector, which had fallen from nearly  $2''.00$  in 1848 to  $1''.62$  in 1855, is now again on the increase, but until the extremity of the ellipse has been passed we can scarcely hope for a good approximation to the true elements.

“ 573,  $\alpha$  *Herculis*. In the Appendix to the Madras volume of Results for 1848-52 is given a discussion of the parallax of

this star as deduced from a series of observations taken in 1851-4. Another pretty extensive series has now been completed with a result as near to the former as could be expected. The observations are not quite so closely accordant as in the first series, the weather having been somewhat less favourable, and the observer from the state of his health not being in quite so good practice, yet the course of the parallactic curve at different seasons of the year is traced out nearly as well as before.

“A discussion of the angles of position gives for the value of the constant of parallax,  $x = + 0''.0692 \pm 0.0080$ . A similar discussion of the distances gives  $x = + 0''.031 \pm 0.0136$ . Combining the two values of  $x$ , according to their weights the definitive value is  $x = + 0''.0616 \pm 0.0075$ , a result almost identical with that obtained in 1853.”

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#### RECENT PUBLICATIONS.

*Zeitschrift für populäre Mittheilungen aus dem Gebiete der Astronomie und verwandter Wissenschaften, Herausgegeben von Professor C. A. F. Peters, Director der Sternwarte in Altona. Band i. Heft i. Altona, 1858.*

The Editor states, in a short preface, that this periodical, which may be considered as a continuation of Schumacher's *Jahrbuch*, is to be devoted to essays on astronomical and physical subjects. The present number contains a paper by Professor Quetelet on the Periodical Appearances of Planets, and a paper by Professor Hansteen on Terrestrial Magnetism.

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*Annales de l'Observatoire Impérial de Paris. Par U. J. Le Verrier, Directeur de l'Observatoire. Tome troisième. Paris, 1857.*

The first two volumes of this important publication have been already noticed in the Annual Report of the Council for 1857. The present volume commences with M. Villarceau's valuable researches on the problem for determining the orbit of a planet or comet, a brief account of which was given in the *Monthly Notices* for last November. The remaining part of the volume is devoted to a continuation of M. Le Verrier's astronomical researches, as given in the first and second volumes. We find in it a thorough investigation of the theory of the periodic comet of 1770, an exposition of the principles relative to the construction of tables of the movements of the planets, the formation of ephemerides, and the comparison of theory with