

## 26. COMMISSION DES ETOILES DOUBLES

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The effect which the war has had on the progress of Astronomy in general, and of Double Star Astronomy in particular, cannot yet be reliably estimated, but we can already say that it is severe and will be felt for many years to come. Its least serious (because, we may hope, only temporary) aspect is the delay in the publication of observations. This effect may be mitigated if observers will communicate their unpublished results and forward reprints of their publications to the two central offices: Lick Observatory for declinations  $+90^\circ$  to  $-30^\circ$ , Union Observatory for  $-19^\circ$  to  $-90^\circ$ . If this be done, information supplied by these offices could include unpublished results.

The completion of the systematic surveys at Lick, Bloemfontein and Johannesburg seems to have made the discovery of new pairs amongst the stars down to the ninth Durchmusterung magnitude largely a matter of the past, unless a considerable improvement in our powers of detection should be achieved. For the fainter stars, a continuation of the visual work of Espin, Jonckheere and others with instruments of greater optical power as well as inspection of photographic plates obtained with long focus instruments would doubtless result in the addition of large numbers of faint pairs. The question is: how would this benefit the progress of our branch of Astronomy, when we are not even in a position to provide adequate, systematic measurement of the pairs already known? It would seem a wiser policy to test for duplicity (repeatedly, when desirable) a limited number of stars selected for special reasons, such as large parallax or proper motion, variable stars when near minimum light, etc. If we should desire some knowledge of the occurrence of double stars among the stars fainter than the ninth magnitude, some Selected Areas plan would seem to be indicated, in order to keep the number of new discoveries within manageable proportions.

With regard to routine measurement of known pairs, the position is not satisfactory. The small number of powerful instruments which are wholly or in part devoted to this task have to carry too great a responsibility. When one keeps a Card Catalogue up to date, one knows how much remains to be done. It is not very satisfying to find that a pair such as ADS 8739 was not measured between 1902 and 1924, nor does a pair such as ADS 4472 give evidence of careful planning of our observing programmes.

We still have to rely mainly on visual measurement with the micrometer in one of its various forms. While the usual micrometer, if used with care and skill under adequate atmospheric conditions, still seems to give the best results as far as position angles are concerned, modern forms of the double-image micrometer and the comparison-image micrometer appear to give better distances, with the additional advantage that they can be used for determining magnitude differences. With suitable precautions, both interferometric and photographic measurement can reach a much higher accuracy than visual, but both are of limited applicability.

Orbit computation leaves nothing to be desired. Whenever a double star has been adequately measured—and not infrequently long before this stage has been reached—one or more orbits are certain to appear.

Our observations of position need to be supplemented by accurate data on parallax, mass ratio, magnitudes, spectral types, radial velocities, etc., of great importance for theoretical investigations. More attention is now being paid to this aspect, but much remains to be done here, notably for faint objects of special interest, such as pairs with degenerate components.

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*President of the Commission*