

## 26. COMMISSION DES ÉTOILES DOUBLES

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MEMBRES: MM. Aitken, Dawson, Finsen, Giacobini, J. Jackson, Maggini, Olivier, Przybyllok, Rabe, Rossiter, Russell, Van Biesbroeck, Van den Bos, Voûte, Zagar.

As double stars too close for photography must be discovered, before they can be observed, it is only natural to start a report about the progress made in double star astronomy during the last 3 years by mentioning the work done by Dr R. A. Rossiter with the Lamont 27-inch refractor at Bloemfontein. The first results have been published in a list numbering 2234 new pairs. Approximate positions are given, but as yet no measures are reported. These pairs are distributed as follows between different limits of distance. For comparison the corresponding numbers for the 1900 discoveries, previously made by Dr W. H. van den Bos, are added.

Limits of distance	0 <sup>o</sup> .1	0 <sup>o</sup> .2	0 <sup>o</sup> .4	0 <sup>o</sup> .8	1 <sup>o</sup> .6	3 <sup>o</sup> .2	6 <sup>o</sup> .4	12 <sup>o</sup> .8
Number, Rossiter	42	278	514	614	587	221	33	
Number, van den Bos	79	268	312	364	444	427	57	

The number of new pairs with a distance below 0<sup>o</sup>.5 is practically the same in both cases, viz. about 460, van den Bos having found more of the difficult close pairs below 0<sup>o</sup>.25 separation requiring fine seeing.

The fact that Rossiter's limit of magnitude is, say three-quarters of a magnitude, fainter than that adopted by van den Bos, may without too much upsetting the proportion between interesting and uninteresting pairs, about double the number of objects to be found.

The recommendation made in the report of 1932, to arrange all the measures contained in the same publication according to right ascension with one entry only, has not been followed in this case, as the list goes round the sky twice.

The discoveries mentioned have been limited by magnitude and distance. Another scheme was chosen by Dr G. P. Kuiper, who made a special examination for duplicity of nearby stars. In this way several new pairs of more than usual interest were found, among which one with a period which is shorter than that of any visual pair previously known.

The question may be put whether the need of micrometrical measures of known pairs is at present not greater than that of fresh discoveries. This question will probably be answered in the affirmative by most of those engaged in double star astronomy except in the case of special objects.

During the last three years the following numbers of visual observations of double stars have been published.

Van den Bos	7190	Johannesburg	9754
Giacobini	6115	Paris	6115
Wallenquist	4351	Lembang	8264
Voûte	3913	Lembang	—
Baize	2613	Le Vésinet	2613
Finsen	2564	Johannesburg	—
Opik	894	Tartu	894
Komendantoff	868	Pulkovo	868
Aller	862	Lalín	862
Kuiper	825	Leiden	825
Furner	788	Greenwich	1389
Milburn	546	Wolsingham	546
All others	2277	All others	1676
Approximately	33806	Approximately	33806

Concerning photographic measures of double stars, the most extensive list of results published during the last 3 years is that issued from Moskva by J. A. Kazansky and Miss E. J. Bugolavski. The number of plates used is 111, of which 21 have been previously measured by Sternberg. The other 90 plates contain 2858 images. It is reported that several other observatories have put photography of double stars on their regular programme so that it may be hoped that further progress will be made in this promising field of work. The collaboration between Johannesburg and Leiden has during later years been extended to photographic observations of double stars, but the bulk of the results is retained for later publication. At present all the plates, so far obtained from Johannesburg and deemed fit for use, have been measured.

Comparison between the measures of the same plate, as made by different persons, occasionally revealed discrepancies, which are large enough to make such repeated measurement desirable. The value of such re-measurement could still be increased by interchanging plates between different observatories, as in that case not only the person but also the other circumstances, under which the measures are made, would be changed.

A list of 5883 pairs in the *Carte du Ciel* zone  $+23^{\circ}$  to  $+25^{\circ}$  has been collected by Pourteau, the distance exceeding  $10''$  in about 60 per cent. of the cases, while about 12 per cent. of the pairs are below  $5''$  of separation.

Another list of about a thousand somewhat closer pairs has been looked up on *Carte du Ciel* plates in the zone  $-40^{\circ}$  to  $-52^{\circ}$  by S. G. Barton. About 90 per cent. of these pairs have distances between  $3''$  and  $5''$ .

Satisfactory results have been obtained at Johannesburg with a simple interferometer constructed by W. S. Finsen, but the number of pairs accessible for trustworthy observations of this kind is small.

A useful list of double stars, one component of which is variable, has been given by L. Plaut. In favourable cases accurate photometry of the variable component may be effected by using the constant neighbour as the only comparison star. It needs no explanation that cases of this kind, where orbital motion is found (44 i Boo), are of unusual interest.

Concerning the immediate future of double star astronomy it should be emphasized that there is more need for accurate measures of known pairs than can actually be effected by the observers at present engaged in this kind of work. In connection with this argument, which is of more weight the larger the instruments required, it is much to be hoped that the Lick Observatory will continue to be a Northern centre of double star astronomy after the retirement of Dr R. G. Aitken, without whom it is hard to envisage our subject.

It is reported that about 3000 unpublished discoveries of southern double stars are still in the hands of Dr Rossiter.

He states that the search for new pairs in the southern hemisphere is so far advanced that the instrument is now available for its share in the real task: that of measuring known doubles, to which discovery is only the introduction.

The need of large instruments for this kind of work is incomparably greater in the south than in the north.

Our Committee takes this opportunity to support strongly Dr Rossiter's wish that the telescope remain at Bloemfontein and engage in the measurement of known double stars.

EJNAR HERTZSPRUNG  
*President of the Commission*