It is possible to derive statistically useful values for a″ and P from ρ'' and W, and then, with luminosities and colour equivalents or spectral types, the masses too.

The statistical investigation of the 350 visual pairs with completely known characteristics yielded a number of regressional equations which in turn can be used for some kind of gauging. It becomes thereby possible to make statements about wide pairs with common proper motions and parallaxes up to 1 pc, i.e. pairs whose orbits will for a long time remain unknown.

N. Wieth-Knudsen. Photo-visual differences in magnitudes of 331, mainly southern, double stars estimated by steps on 505 plates from the Bosscha Observatory taken 1949.7 – 1952.4.

(Distribué en manuscrit à Dublin.) Exposé de la méthode de mesures et de réduction, liste des résultats.

Compte rendu de la séance. 31 août 1955

PRÉSIDENT: M. P. Muller.

SECRÉTAIRE: Dr W. H. van den Bos.

En ouvrant la séance, le Président fait approuver d'abord le choix de W. H. van den Bos comme secrétaire, puis il transmet à la Commission les salutations des membres absents Baize, Rabe et Wierzbinski. Il propose que des messages soient adressés à nos collègues Finsen, Jeffers, van Biesbroeck et Voûte.

L'ordre du jour de la réunion, les textes de trois résolutions proposées à l'examen de la Commission et le tableau des orbites parvenues depuis la Circulaire No. 6 ont été distribués sous forme d'une Circulaire spéciale. Le Président propose de discuter d'abord la première résolution, qui prévoit l'addition du mot 'visuelles' au nom de la Commission. En présence d'une contre-proposition sur le terme ('astrométriques'), un vote est demandé sur le seul principe du changement de nom, lequel est repoussé (8 voix contre 4).

La seconde résolution (forme du futur catalogue général) ne peut être examinée avec fruit qu'après la présentation du double rapport de Jeffers et de van den Bos sur les cartothèques de mesures pour les zones Nord et Sud; ce rapport est donc présenté par van den Bos (texte plus bas). Le Président insiste sur le fait que Jeffers aura le catalogue Nord entièrement sur cartes I.B.M. dans quelques mois, et que le moment est donc venu pour la Commission de se prononcer sur la suite du travail selon le plan esquissé dans le Draft Report, notamment quant au report sur cartes I.B.M. de la zone Sud après la zone Nord. Après quelques questions complémentaires, la résolution (I) est adoptée sans opposition (13 voix pour).

Van den Bos signale une erreur d'impression dans les formules de passage entre les systèmes d'éléments orbitaux (*Trans. I.A.U.* **5**, p. 334): dans celle qui donne $tg(\Omega+\omega)$ il faut lire au dénominateur $+A+G$ et non $+A-G$. A cette occasion, il insiste une fois de plus pour que tous les calculateurs d'orbites se conforment aux mêmes conventions afin d'éviter le retour d'erreurs graves de la part des utilisateurs.

Le Président donne ensuite quelques explications sur l'organisation et le développement actuel du service des Circulaires d'Information, puis soumet au vote la résolution (II) sur ce point. Adoption sans opposition par 15 voix pour.

Hertzsprung, à propos d'une résolution de la Commission 24, souligne qu'il serait désirable aussi pour les couples faibles et écartés du type de ceux de Luyten de recommander l'emploi des grands réflecteurs; ce point de vue est approuvé par la Commission.

Le Président signale à l'attention de la Commission l'organisation par l'Institut d'Astrophysique (Paris) en 1956 d'un colloque sur les étoiles doubles, puis lève la séance.

Rapports des Bureaux Centraux Nord et Sud

Dans le premier des deux rapports ci-dessous, on trouvera notamment la description complète du catalogue manuscrit de la zone Sud établi par van den Bos. Afin d'éviter toute confusion, il est rappelé que sa disposition n'est pas entièrement identique à celle prévue dans le projet de catalogue général du même auteur (*Trans. I.A.U.* 8, p. 386), bien que le projet ait largement profité de l'expérience du catalogue manuscrit.

I. *Report of Union Observatory*

Dr Finsen continues his work with his eyepiece interferometer, measuring suitable known pairs and searching systematically for new pairs. Dr van den Bos and Mr Churms measure with the micrometer.

The manuscript for a General Catalogue of Double Stars south of $-19°$ (1875; the C.P.D. region) has been written. It contains 18,678 entries (multiple stars counted singly), against Innes' loose leaf catalogue of 1927, 6902 entries. This great increase is principally the result of the surveys at Bloemfontein by Dr Rossiter and his collaborators and at Johannesburg by van den Bos and Finsen, by Barton's searches through Carte du Ciel catalogues and Luyten's catalogue of pairs having common proper motion.

Very little rejecting has been done, mostly for the following reasons:

(1) Strong evidence that the object is not a double star in the visual sense;
(2) Objects suspected of duplicity, but so far not confirmed;
(3) Pairs with erroneous positions which could not be identified by later observers;
(4) Very wide pairs—frequently given separately in meridian catalogues—which have never been measured differentially.

My principle has been that it is easy to reject at the proper time, but difficult to supplement later on.

Arrangement of the Catalogue

As I am retiring on pension next year and it took me over two years to write the manuscript, I obviously could not afford to wait until my colleagues had made up their minds about arrangement of the Catalogue. I had to keep my own council, but the information is there and the final form could still be decided if it were proposed to incorporate my Catalogue in a General Catalogue for the whole sky. The arrangement I have chosen is as follows:

The hour of right ascension is given at the top of the page.

Col. 1. Minutes and tenths of the R.A. 1900.

Col. 2. Minutes and tenths of the R.A. 2000. This may exceed 59·9 when the precession carries the R.A. 2000 into the next hour. For a few objects near the pole, the hour of R.A. 2000 is given below the minute.

Col. 3. Degree of declination, for 1900 or 2000, whichever is numerically the smaller. As all objects in this catalogue are south of the equator, the minus sign has been omitted.

Col. 4. Minutes of declination 1900; this may exceed 59.

Col. 5. Minutes of declination 2000; this may exceed 59.

Col. 6. Discoverer's number; for multiple stars the combination of components is added.

Col. 7. Year of the first and of the last complete set of measures available.

Col. 8. Total number of complete sets of measures; N = numerous, O = orbit.

Col. 9. Position angle for the earlier year of the seventh column. In case an orbit has been computed, it gives the period to the nearest whole year. For full information on orbits, the latest orbit catalogue and recent literature should be consulted.

Col. 10. Position angle for the latest year of the seventh column. Where the measures fail to show certain change, this is left blank. In this way pairs showing motion are picked out at a glance. Where the direction of motion in angle would be ambiguous,

direct motion is indicated by +, retrogade by − between the two angles. For orbits the year in which periastron passage takes place is substituted.

Col 11. Separation for the earlier year of the seventh column. For orbit pairs the eccentricity in units of 0·01 is substituted.

Col. 12. Separation for the later year in the seventh column. It is left blank when the measures fail to show certain change. For orbit pairs the semi-axis major is substituted.

Col. 13. Visual magnitudes. As far as possible they are on the photometric scale, but may be subject to fairly large errors, especially for faint components.

Col. 14. Spectral types of the components, if known. If joined by a plus sign, the spectrum is composite and may refer to the bright star alone.

Cols. 15, 16. Components of the proper motion in R.A. and declination, in seconds of arc per thousand years. They have, with few exceptions, been taken from Boss General Catalogue, Yale and Cape photogr. zone catalogues and Luyten's Bruce p.m. survey.

Col. 17. D.M. number: Schönfeld to −22°, Cordoba from −23°, C.P.D. from −52°, the minus sign being omitted. When given in brackets, it refers to another D.M. than the normal one for its declination zone.

Cols. 18, 19. B.D.S. and A.D.S. number.

Index to discoverer's number: discoverers alphabetical order, with abbreviation used, numbers in numerical order (missing: north of −19° (1875) or rejected), bracketed if in Catalogue under different designations, which given immediately below. R.A. 1900 given, so pairs can at once be found in the Catalogue.

Specimen of entry:

0^h

04,3	09,4	28	33	00	β391	1876–1946	31	277	264	0,0	1,5	6,2–6,3	F_2–F_2	+55–1		28°16 30111
06,5	11,5	49	71	38	h3352	1879–19$\underline{14}$	2	306			6,5	9,3–11,3	G_0	−60–66		50°29
23,3	28,3	20	53	20	B1909	1929–19$\underline{54}$	0	111	1952	0,0	0,21	7,2–7,2	G_0	−117–105		21°57

(Figures underlined are written in pencil for bringing up-to-date.)

II. *Report on behalf of Dr Jeffers*

At Lick Observatory the punched card system has been adopted for the double star card catalogue.

All measures published or received in manuscript since the beginning of 1950 have been put on cards; those from 1927 to 1950 have been done from R.A. 0^h to 17^h 3. It is estimated that in less than a year from now this task will have been completed. To date about 52,000 cards have been punched, with roughly 24,000 still to be done. The rate of punching has been greatly speeded up, thanks to financial support by the National Science Foundation, and is now approximately 5000 cards per month.

Dr Jeffers and I are of the firm opinion that, if a future General Catalogue of Double Stars were to be published, it should do away with the artificial declination division of the earlier GC's and cover the whole sky. We have tentatively discussed the possibility of sending a copy of the U.O. card catalogue to Lick, so that the double stars south of −20° could be put on punched cards likewise.

One important advantage of the punched card system of catalogue is that it opens up other possibilities of dissemination of the information contained in it than by means of a printed GC, the cost of which—even in the most condensed form which would still be of any use—may well prove prohibitive. Dr Jeffers already keeps such possibilities in mind. He mentions the following obvious advantages of the punched cards:

(1) a uniform system of entering observations, one per card;

(2) a system capable of indefinite and orderly expansion;

(3) a means of rapidly and accurately making typewritten copies of any parts, or of the whole, of the Catalogue in a form practically suitable for reproduction in printed form.

(4) the punched cards constitute valuable raw material for statistical investigations pertaining to double stars, since they can be handled at high speed on the various sorters etc. of the IBM arsenal.

Le Dr van den Bos a donné lecture, à suite de ce rapport, d'un extrait d'une lettre reçue du Dr Jeffers juste avant le congrès, extrait dont voici le texte:

Now about 73,000 observation cards have been punched. There remain to be prepared about 4000 cards from the 'new pairs' list which comprises pairs announced since the A.D.S. closing epoch 1927.0 and so have no A.D.S. numbers. There are also a few older large lists that probably did not get into the A.D.S., and these may require about 10,000 cards. It appears, therefore, that our card-punching operations for the sky N of $-20°$ will be finished in three or four months.

After the completion of the above phase of the work, we shall be in a position either to start on the punching of the southern sky from your cards, or to get matters organized for a preparation of a double star list, or catalogue, to match the one that you have prepared for the southern sky. This catalogue could also be on punched cards.