

Dans le premier cas, les termes principaux, dont il faut tenir compte, sont de deux espèces: 1°, les termes critiques périodiques (aux petits diviseurs), qui font voir la différence énorme entre les mouvements en question, où l'excentricité de la planète troublante est différente de zéro, et les solutions bien connues du problème restreint de H. Poincaré; 2°, les termes critiques séculaires. On pourra développer les perturbations par groupes. Les séries obtenues sont absolument et uniformément convergentes, et valables pour toujours.

Dans le but de généraliser les résultats dans la seconde direction, M. Heinrich a défini certaines opérations aboutissant, entre autres, à obtenir la genèse de mouvements moyens pour toutes les variables. C'est ainsi qu'il a essayé de démontrer, dans des cas particuliers très étendus une opinion, non démontrée, de Lejeune-Dirichlet et H. Poincaré: étant donné un mouvement quelconque, il est toujours possible de trouver une solution périodique d'une période convenablement longue, qui se rapproche de ce mouvement aussi près qu'on le veut et pendant un temps aussi long qu'on le veut.

Commission 8. (ASTRONOMIE MÉRIDIENNE.)

Two meetings were held, with Sir Frank Dyson in the chair. Dr J. H. Oort acted as Secretary.

The President gave a brief survey of the various points mentioned in the printed report.

In connection with the paragraph on the observation of fundamental declinations by means of an azimuth instrument Dr Hins reported on the present state of the large instrument which is being built for the Leiden Observatory. It is hoped that this instrument, by Cooke, will be completed within a few months. Some photographs showing the peculiarities of the instrument were described.

There was a general discussion on the observation of the Eros comparison stars. A full report of this subject is given in the Commission of Solar Parallax.

Dr Knox-Shaw reported on the progress of the reduction by Dr Jackson and himself of Hornsby's observations made in the years 1774-1803. These observations include many of the sun and the planets. A complete ephemeris of the sun has been computed for about 17 years and Mr Bawtree has computed an ephemeris of Venus for 5 years, 1780-84, and Dr Crommelin an ephemeris of Uranus. The observations of sun and planets would help to fix the equator point of the instrument and of its systematic errors in declination. The Committee agreed about the usefulness of the planetary positions for checking the rotation of the earth and hoped that volunteers would offer to compute further planetary ephemerides.

Sir Frank Dyson spoke about the possible usefulness of minor planets for checking the equator points of transit instruments and recommended the use of the planet Vesta for which a general theory and tables by Leveau are available though the adopted masses of Jupiter and Mars require revision. It was hoped that some dynamical astronomer would undertake to revise the tables where necessary.

In the meantime he advised the commencement of observations of Vesta.

With regard to the proposal by Dr Jones concerning the adoption of the same equinox by all observers Dr Kopff said that for the present they would keep on using Auwers' equinox. It was agreed that a short summary indicating the equinox and containing information as to the system used in star catalogues

would be very useful for the computation of proper motions. It was especially urged that it should be indicated whether proper motions had been used to reduce the positions to a common epoch, and whether or not they had been corrected for magnitude equation.

Professor Dneprowsky gave a summary of the results obtained by Erthel's vertical circle at Pulkowo for the new fundamental catalogue for 1925 of 1334 stars between the pole and -10° declination. From the upper and lower culminations a correction of $-0.58''$ was deduced to the refraction constant of the Pulkowo tables. The corrections to Boss's declinations are in close agreement with those derived by Raymond.

M. Fayet stated that at Nice they are observing intermediary stars between -15° and $+15^\circ$ in three zones, of which two have been completely observed. The zone -5° to $+5^\circ$ is being printed and contains determinations of the proper motions of all the stars.

Mr Morgan stated that at Washington the intermediary stars were being observed between -30° and the North Pole. Dr Jones said that at the Cape stars down to the seventh magnitude were being observed between -30° and the South Pole, but these are not intermediary stars. Mr Morgan raised the question as to the number of fundamental stars required, whether the 750 proposed by Mr Stewart would be enough or whether it would be advisable to observe all 3000 of the Backlund-Hough list. A discussion took place on the difficulties of observing faint stars. Stars fainter than $8^m.0$ are sometimes difficult to observe and the errors may often be greater than those of brighter stars. It was generally agreed that the meridian circle should furnish accurate positions of all stars down to $8^m.0$ and to fainter magnitude in those regions of the sky where the number of stars brighter was not sufficient for the reduction of photographic plates.

Dr Kopff stated that 14,000 stars were being observed in connection with the photographic revision of the A.G. zones. These are not intermediary stars but were chosen so as to give an average of ten on each plate.

Mr Dawson reported on the progress of the La Plata Observatory in the observation of 7800 stars between -57° and -62° completing their work on the zone -52° to -66° .

Dr Moreau described a simplified graphical method for the reduction of meridian observations by the differential method.

Mr Sanders described a method which has been tried by him and Mr Raymond of measuring declinations by observing pairs of stars with zenith telescope and meridian circle on the same night. The two advantages of this method are that nadir observations are unnecessary and that half of the observations are made purely differential.

The other points raised in the report were dealt with briefly but it was not considered necessary to have any formal resolutions recommending them.

Commission 9. (INSTRUMENTS.)

M. Hamy, président, étant absent, M. Ch. Fabry a été désigné par le Comité exécutif pour le remplacer dans ses fonctions.

Ont pris part, en outre, aux travaux de la Commission: MM. de la Baume Pluvinel, Henri Chrétien, Delvosal, Nušl, Silva, Membres de la Commission; et MM. J. Baillaud, Esclangon, Evershed, Gregory, Innes, Van Heel, Lejay, Lismann, Nechvile, Sirks, Svoboda, Tinoco.