

*Commission 34. (PARALLAXE SOLAIRE.)*

Sir Frank Dyson, President of the Commission, took the chair. Dr H. Spencer Jones acted as Secretary.

Professor Kopff presented a Report on the present state of the observations of the two lists of Eros reference stars. The first list had been completely observed at Lick, Uccle and Washington, with a total number of eight observations of each star.

Observations of this list were also in progress at Greenwich, Neu-Babelsberg and Hamburg. The second list had been well observed at La Plata and the Cape, both of which Observatories aimed at securing four observations of each star; the Lick Observatory had obtained one observation of each star in this list. In addition, observations of stars selected from the second list were being secured at Greenwich and elsewhere. It therefore appeared that both lists of stars would be well observed, with eight or more observations of each star.

In view of this Report, it was decided that there was no need to supplement the meridian observations by measurement of a number of photographs of large fields.

The President made enquiry as to what Observatories were proposing to co-operate in the observation of Eros at the time of opposition.

Professor Schlesinger stated that photographic observations would be secured with the Yale telescope at Johannesburg.

Sir Frank Dyson stated that photographic observations would be secured at Greenwich with the 26-inch and the 13-inch (astrographic) refractors.

Dr Spencer Jones stated that photographic observations would be secured at the Cape with the 24-inch refractor and probably also with the 13-inch (astrographic) refractor as well as visual observations with the heliometer. He understood also that at the Union Observatory, Johannesburg, micrometric observations would be secured with the 27-inch visual refractor.

M. Baillaud thought that Algiers and possibly other French Observatories would co-operate, if the Commission passed a recommendation urging that such observations should be undertaken.

Professor Schlesinger added that probably observations would be secured at Allegheny, with the Thaw refractor, if their desirability were urged by the Commission.

Professor Kopff stated that in Germany visual observations would be secured at Neu-Babelsberg with the large refractor; observations would possibly also be obtained at Königsberg.

M. Moreau stated that at Uccle both micrometric and photographic observations would be obtained.

M. Nechvile stated that observations would be obtained at Prague with a refractor of astrographic focal length.

M. Commendantoff stated that the Russian Observatories desired to co-operate and that observations could be secured at Simeis and possibly elsewhere. The large reflector at Simeis could be employed for the determination of the colour of Eros.

A resolution was passed urging all Observatories with suitable instruments to co-operate in securing observations of the planet Eros at the forthcoming opposition.

A resolution was passed urging the great importance in the photographic

observations of securing exact equality between the magnitude of Eros and the mean magnitude of the comparison stars, by the use of a rotating sector. In view of the motion of Eros relative to the stars, trials would be necessary in order to secure this equality.

Some discussion took place as to the length of exposure necessary in the photographic observations and as to whether the telescope should be guided upon Eros or upon a comparison star. It was agreed that exposures should be as short as possible consistent with securing good measurable images, but that the exact length of exposure must be decided by each observer for himself. Diverse views were expressed on the question of guiding upon Eros or upon a star and it was agreed that, while the decision would depend largely upon local circumstances, it was desirable that where possible both methods should be tried beforehand for comparison.

The importance of the determination of the colour of Eros was emphasized by Sir Frank Dyson, in view of the systematic errors which arise from differential atmospheric dispersion. Determinations of the colour of Eros could be undertaken at Greenwich, Simeis and probably elsewhere. On the motion of Professor Schlesinger, the following resolution was adopted for consideration by Commission 29:

“Commission 34 requests Commission 29 to arrange for the determination of the spectral types of the two lists of reference stars for the opposition of Eros, 1930–31 and to arrange for determinations to be secured, round about the time of opposition of Eros, of the colour and spectrum of Eros.”

Professor Kopff reported that Professor Witt had continued his work on the orbit of Eros and that he would derive an exact ephemeris of the planet for the period around opposition. Sir Frank Dyson added that this cleared up a very important and difficult part of the work and the Commission would be grateful to Professor Witt for his co-operation.

Professor de Sitter drew attention to the desirability of arranging the observations in such a way as to enable the mass of the Moon to be derived with the greatest weight. In his opinion, the derivation of the mass of the Moon which the Eros observations would afford was of even greater importance than the derivation of the solar parallax. To derive the mass of the Moon with the greatest weight, as many observations as possible should be secured at the times when the Moon is 90 degrees distance from Eros.

Professor Kopff stated that he would undertake the preparation of a general catalogue of Eros reference stars, with proper motions. He recommended all observers to use this general catalogue in their reductions, in preference to the positions for the comparison stars which they might derive from their own observations.

Father Rodés gave an account of a method he had used for deriving the dimensions of the Sun and hence the solar parallax, by using the measured radial velocity of the Sun and the period of rotation as derived from surface markings.