parus* du Mémoire d'ensemble sur l'*Opération des Longitudes de* 1933, ainsi que le devis des dépenses totales qu'il faut envisager pour l'impression.

Question 6. M. E. Esclangon, qui estime que le problème de la variation des longitudes a pris un aspect nouveau depuis qu'il est suivi d'une façon continue par le Bureau international de l'Heure, croit qu'il n'y a pas lieu de décider *actuellement* la reprise d'une nouvelle Opération internationale.

La Commission, comme conclusion, adopte la résolution suivante à l'unanimité:

"La Commission internationale mixte des Longitudes a examiné les deux premiers fascicules parus de l'exposé général de l'Opération internationale des Longitudes de 1933.

"Elle est reconnaissante au Gouvernement français d'avoir mis à la disposition du Bureau international de l'Heure les fonds nécessaires aux calculs et à la publication de ces deux premiers fascicules.

"La Commission recommande la continuation de la publication sous la même forme pour les soixante et onze stations de longitude qui ont participé à l'Opération, et elle demande, après avoir examiné le devis des dépenses d'impression qui lui a été soumis, qu'une subvention annuelle de 3750 francs or soit mise à la disposition du Président de la Commission mixte durant trois années consécutives, par chacune des Unions astronomique et géodésique-géographique.†

"Cette publication sera la conclusion de l'Opération de 1933 donnant la position en longitude de soixante et onze stations à la surface du globe.

"D'autre part, aucune variation en longitude n'ayant été mise en évidence par la comparaison des résultats de 1933 avec ceux de 1926, la Commission estime qu'il n'y a pas lieu de recommencer semblable Opération avant un laps de temps de dix ou quinze années. Les deux Unions en décideront dans une de leurs Assemblées générales ultérieures."

Le Président fait connaître qu'il vient de recevoir par une lettre de M. Y. Hagihara des propositions de M. M. Miyadi.

En l'absence de MM. Y. Hagihara et M. Miyadi, acte est seulement pris de ces propositions, dont copie sera adressée pour avis à tous les membres de la Commission.

COMMISSION 19 (VARIATION OF LATITUDE)

(COMMISSION MIXTE DES LATITUDES)

PRESIDENT: Dr H. SPENCER JONES.
SECRETARY: Mr W. D. LAMBERT.

The committee met at 11.30 a.m. on Thursday, August 4, 1938.

Prof. Carnera stated that the Draft Report had been made available to all and that he would therefore not summarize it; furthermore the results for 1936 had been published in *Astronomische Nachrichten* No. 6290 and those for 1937 in *Astrono-*

* Ils ont été distribués à tous les membres de la Commission mixte des Longitudes, présents à l'Assemblée générale de Stockholm, et expédiés ensuite aux membres absents.

† Après réception de cette résolution, sur avis de la Commission des Finances de l'Union Astronomique Internationale et sur proposition de son Comité Exécutif, l'Assemblée Générale de l'Union a décidé d'accorder pour sa part une subvention totale de 7500 francs or, 2500 francs or par an pendant 3 ans, soit les 2/3 de la demande de la Commission.

mische Nachrichten No. 6372, copies of which were distributed to those present. He called attention to the following salient points:

(*a*) His adherence to the methods of calculation previously used.

(*b*) The inclusion of the stations in the Southern Hemisphere, which made some difference in the derived path of the pole.

(*c*) The small weight of the co-ordinates, due especially to the bad weather at Carloforte during the winter, and the small number of observations obtained during the winter at the northern stations generally.

(*d*) The smallness of the empirical periodic terms and their small weight.

Dr Spencer Jones called attention again to the small weight of the empirical terms and to the danger of introducing them unless theoretically justified because they introduced annual terms into the latitude variation which might be spurious. There is little systematic difference between columns 1 and 3 (Draft Report, p. 148) which represent Carnera's figures for 1936, respectively with and without the southern stations, whereas the introduction of the empirical terms produced marked systematic changes in the co-ordinates.

He proposed to omit the empirical periodic terms in future and to give two distinct reductions, one for the northern stations and one for the northern stations combined with the two southern stations, Adelaide and La Plata, stations like Greenwich and Batavia being treated separately because not on the same parallel with any other station. The Commission unanimously approved these proposals, Prof. Carnera stating that he had included the empirical terms merely for the sake of continuing the reductions in the same way as formerly.

The Chairman proposed that the Commission express its appreciation of the work done by Prof. Carnera and of his energy, zeal and scientific knowledge; this was unanimously agreed to.

As regards financial matters, the Chairman called attention to the fact that, as already noted, preliminary values had been published for 1936 and 1937, but that the figures in Dr Kimura's hands for the period 1931·05 to 1935·06, at which time considerable changes were made in the star programme, were now being discussed by him. He asked that the Commission recommend to the Union a special grant of £350 for the publication of a volume containing the definitive reduction of these observations. He also asked that the Commission request the usual annual grant for the work of the Central Office. Both these proposals were approved unanimously by the Commission.

The next order of business was the proposal of Dr Kimura (*Proc. Imp. Acad. Tokyo*, 1938, No. 3) to introduce a new programme of observations requiring the observation of three groups per night instead of two. The Commission felt that the introduction of an additional group would overburden the observers at some observatories especially at those where there was only one observer and that the inclusion of an additional group in the programme would be meaningless in bad weather. Furthermore, the main purpose of the change was to give a better determination of the empirical terms and the Commission had already decided that these should be omitted in future. The Commission therefore recommended that the present programme be left unchanged.

Prof. Carnera called attention to the fact that the instruments now in use had been designed nearly forty years ago and that the accuracy then desired was less than that now felt necessary. He expressed a high opinion of the Ross Zenith tube formerly at Gaithersburg, but felt that the measurement of photographic plates required much labour. He submitted designs for a new zenith tube, of the general

Ross type, but suitable for usual observations. The members of the Commission on examining the drawings thought the design a good one and wished to have a similar instrument at every station. Attention was called, however, to the small field of view, which cuts down sharply the number of available bright stars and necessitates the observation of faint stars, whose proper motions were not accurately known.

The Chairman called attention to the fact that uniformity of instruments and methods was an essential feature of the International Latitude Service and that unless all the co-operating governments would be prepared to bear the cost of new instruments of the Carnera type it would not be possible to adopt a new design of zenith telescope. Furthermore the design would need to be thoroughly tested at one station before its general adoption could be recommended. Prof. Carnera asked whether the Union could contribute towards the expense of an experimental instrument, stating that the approval of the Union and some financial support would be a help in obtaining further funds. The Chairman felt, however, that the Union had no money available for such a purpose. The Commission therefore recommended that Prof. Carnera should try whether he could secure funds for such an instrument, the cost of which was estimated at RM. 10,000. The success of such an instrument would help in securing its general introduction into the work of the Latitude Service.

The Commission then adjourned.

COMMISSION 20 (MINOR PLANETS, COMETS AND SATELLITES)

PRESIDENT: Prof. A. O. LEUSCHNER.
SECRETARY: Miss J. M. VINTER HANSEN.

1. Joint meeting of Commissions 4, 8 and 20 on August 4.

This meeting is recorded in the report of Commission 4 (see p. 355).

2. Meeting on August 5.

The President mentioned the resolutions adopted on the previous day at the joint meeting of Commissions 4, 8 and 20. As Commission 20 was adequately represented at that meeting these resolutions needed no further discussion in Commission 20.

The President also mentioned a proposal by Prof. Kepiński that the national ephemerides should supply barycentric corrections to the Sun's geocentric rectangular co-ordinates. This proposal was referred to Commission 4.

The President supplemented the report of the sub-commission on solar parallax (see p. 150) with some communications that had come to hand after the printing of the Draft Report; for instance Prof. Slocum of the Van Vleck Observatory had written that the cause of his Eros observations in 1931 not having been reduced immediately was lack of accurate positions for some of his comparison stars. Also Prof. Trumpler had published (*L. O. Bull.* **18**, 93, 1937) the results, based on Kopff's Catalogue of primary reference stars, obtained with the 15-foot camera of the Lick Observatory. Prof. Hagihara was glad to be able to inform the Commission that Mr Hasimoto had now measured the plates of the Eros observations taken in Tokyo. The report on solar parallax was adopted.