EPHEMERIDES

Report of Meeting. 19 August 1958

PRESIDENT: D. H. Sadler.

SECRETARY: W. Fricke.

The President reported the loss to the Commission by death of Prof. A. N. Gigizkij and Prof. O. Kohl, and referred briefly to the contributions they had made in the field of ephemerides.

The *Draft Report* of the Commission was adopted without changes or additions.

The President then announced that three matters on the agenda had already been discussed at the joint meeting of Commissions 4, 7, 17, 20 and 31, and needed no further comments at this stage. Further, the President announced that D. K. Kulikov had agreed to withdraw his proposal, given in the agenda for the meeting, on the precise correction for aberration to the apparent position of the planets.

The following resolution, submitted by the National Committee of Astronomy of France, was referred to Commission 4 by the General Assembly: 'Le Comité National d'Astronomie de la France recommande que l'année tropique, étalon naturel du Temps des Ephémérides, soit définie comme la durée nécessaire pour que la longitude moyenne du Soleil augmente de 360°.'

The President explained that this recommendation is designed to remove the ambiguity between the two existing definitions of the tropical year: one by means of the mean longitude of the Sun and the other by means of the right ascension of the mean sun. The two differ very slightly by the secular acceleration of the Sun and the difference in the secular terms of precession on the ecliptic and the equator. It is essential that the tropical year, on which the fundamental definition of the second is based, should be precisely and uniquely defined; the recommendation is in full accord with the definition of the second and with ephemeris time. The question had also been raised whether the origin at which the tropical year is deemed to start should be specified; it seemed to him that this is unnecessary and might be misleading, in view of the definition of the second. The Commission might, however, consider adding the following: 'The beginning of the Besselian Year is the instant at which the Sun's mean longitude, affected by aberration and measured from the mean equinox, is 280°.' The resolution was unanimously adopted with the addition.

Subsequent to the meeting W. Fricke pointed out that it had not been made clear to the Commission that the addition involved a change in the commonly accepted definition of the Besselian Year. The President had accordingly requested that the addition be omitted from the formal list of resolutions adopted by the General Assembly. It can be reconsidered at the next meeting.

The President then stated that according to a proposal by G. M. Clemence and himself Commissions 4 and 31 should consider the adoption of a joint resolution concerning the definition of Ephemeris Time. With the new definition of the 'Ephemeris Second' adopted by the Comité International des Poids et Mesures it has become necessary to replace the formal resolution relating to Ephemeris Time adopted by the General Assembly of the I.A.U. (Resolution No. 7, *Trans. I.A.U.* **8**, 66, 1952). The proposed new resolution, which is given in full with detailed explanation in the report of the meetings of Commission 31, states that Ephemeris Time (E.T.) is reckoned from the instant, near the beginning of the calendar year A.D. 1900, when the geometric mean longitude of the Sun was 279° 41′ 48″.04, at which instant the measure of Ephemeris Time was 1900 January $0^d\ 12^h$ precisely. W. Fricke confirmed the correctness of this statement, which has been checked at the Astronomisches Rechen-Institut. The resolution was unanimously adopted by the members of Commission 4.

Subsequent to the meeting Prof. A. Danjon pointed out that the definition was not, in his view, as precise as could be desired owing to the fact that the practical determination of Ephemeris Time, as so defined, will depend on the adopted value of the constant of aberration. He would have preferred the definition of the epoch to have been based on an appropriate value for the apparent mean longitude of the Sun, which would be

equivalent to specifying the epoch as the instant when the geometric mean longitude of the Sun, reduced by the constant of aberration and referred to the mean equinox of date, was 279° 41′ 27″.57.

Commission 17 had expressed the desire that Commission 4 discuss the continuation of the publication of ephemerides of the Moon crater Mösting A; with the cessation of the *Berliner Jahrbuch* the publication of the ephemeris has been discontinued. D. K. Kulikov announced that the Institute of Theoretical Astronomy, Leningrad, is willing to publish the ephemerides of Mösting A in the 'Astronomical Ephemeris' of the U.S.S.R., beginning with the year 1963. For the years 1960–2 the ephemerides will also be computed and published separately. He reported that the ephemerides are needed by several observatories in the U.S.S.R., among them the Engelhardt Observatory, Kasan, and the Kiev Observatory.

W. Fricke presented a report on the precision to which the right ascensions of stars will be given in the international volume *Apparent Places of Fundamental Stars*. At present the right ascensions are tabulated to a precision of 0ˢ.001, only for stars with declinations less than 60° 00′. Beginning with the year 1960 the right ascensions of all stars with declinations less than 81° will be tabulated to a precision of 0ˢ.001, at intervals of ten transits. The purpose of this change is to ensure that observers can make full use of high-precision observations that are now possible with, for instance, the modern astrolabe and possibly other instruments. This procedure had been approved by the Commission before the meeting by correspondence.

W. Fricke then reported on the progress of FK 4 and the plan for its introduction into APFS. The completion of FK 4 can be expected at the beginning of 1960. Since the computations for the volume APFS have to be made about two years in advance, the apparent places for 1960 and 1961 will still be given on the basis of FK 3; however, after the completion of FK 4, corrections $\Delta\alpha$ and $\Delta\delta$ will be calculated for all fundamental stars which will transform the ephemerides given in the volumes APFS 1960 and 1961 into those based on FK 4. These corrections will be calculated and published for 1960·5 and 1961·5, and these can be applied as constants for the years 1960 and 1961. There is good reason to assume that the printed apparent places in the volume for 1962 will be based on FK 4. For observers, who have already used FK 3R, the Astronomisches Rechen-Institut will publish the systematic corrections which transform FK 3R positions into FK 4.

G. Fayet raised the question whether a change from the standard equinox of 1950·0 to a new equinox should be considered for introduction into the national ephemerides. If the next standard equinox were to be 1975·0, the ephemerides should be based on the new equinox from 1963 onwards. W. Fricke recommended that no change of the standard equinox should be considered now, and that the equinox of 1950·0 could well serve until that of 2000·0 takes its place. The planetary co-ordinates for the years 1960–80, published by H.M. Nautical Almanac Office, are referred to the equinox of 1950·0. The members of the Commission agreed, and the President stated that no change in the standard equinox is recommended.

The following proposal from R. d'E. Atkinson and G. M. Clemence was unanimously accepted by the Commission: 'That in the computations for eclipses in the national ephemerides the same constant (15′ 32″.58) shall be used for the semi-diameter of the Moon at mean distance as is used in the lunar ephemeris, leading to the derived formula

$$\text{semi-diameter} = 0{\cdot}272446\ (\text{horizontal parallax}) + 0''.079;$$

but that, in calculating the duration on the central line for total solar eclipses, approximate corrections be applied for the irregularities of the Moon's limb.'

The President reported on the *Berliner Astronomisches Jahrbuch*, which ceases publication after the volume for 1959. The *Berliner Jahrbuch*, introduced in the year 1776, appeared in 184 volumes. Cessation of publication was decided upon on the ground that reproduction from other national ephemerides for separate publication could no longer be recommended and seems uneconomical in the future. He expressed his regret, which

would surely be shared by all present, at the termination of a publication of such a long and distinguished history. The President also reported the appearance of another new national ephemeris, namely the *Indian Ephemeris and Nautical Almanac*; this fulfilled a special need in relation to the Indian calendar. He mentioned in this connexion that duplication of astronomical computations for the national ephemerides is unnecessary in the future because of the willingness of the Ephemeris Offices to exchange their computations. The only national ephemeris which is entirely independently produced at the moment is the Japanese Ephemeris.

The President thanked the members of the Commission for their co-operation during his presidential term, and expressed his best wishes for further successful work by the Commission.

https://doi.org/10.1017/S0251107X00020666 Published online by Cambridge University Press