

Mount Wilson Observatory; and Professor Frost, Yerkes Observatory, to consider the whole question and to submit a Report to the President of the Commission before the next meeting of the Union.

The Report of the Sub-Committee appointed, in accordance with a resolution adopted at the meeting of the Union held at Cambridge in July 1925, to prepare a short list of stars to serve as standards of comparison in the determination of radial velocities of other stars was considered and adopted with some slight amendments.

*Commission 31. (DE L'HEURE.)*

PRESIDENT ... ..	PROFESSOR R. A. SAMPSON
VICE-PRESIDENT ... ..	GENERAL FERRIÉ
GENERAL SECRETARY ... ..	M. BIGOURDAN
SECRETARY TO THE MEETING ... ..	M. R. MADWAR

*First Meeting, July 7th*

The President gave a short résumé of the work and constitution of the Bureau de l'Heure; he also drew the attention of the Commission to the necessity of revising the existing regulations and emphasized that such regulations when finally drawn and accepted should be strictly observed. The existing system presented substantial advantages. The French signals are emitted and paid for by the French Government, they are more numerous than those emitted from any other source; and the Commission in association with General Ferrié decided on the type and emission of these signals. Then the publication of a journal in the form of a Bulletin is of great importance to all concerned in time determination. The Bureau de l'Heure is also a laboratory for methods of time determination, but this is a work for the future, and its function as an experimental laboratory has not so far been fulfilled.

The President then asked the Commission to give a certificate to the Executive Committee with regard to the accounts of the Bureau, viz. that

"The President has examined the details of expenditure for the past three years and certifies that all is in order according to the Regulations."

This was carried.

Owing to the financial position a supplementary grant is required. There is in view at the end of the current year a deficit of 13,000 frs. The President therefore asked the Commission to send to the Executive Committee a request in the terms of the following resolution:

"The funds allowed for the past triennium have been exceeded and an increase of subvention is required. The sum asked is 75,000 frs. for each of the three years 1929, 1930, 1931, together with a supplement of 13,000 frs. for the current year."

This was carried.

The General Secretary began a report in detail on the work of the Bureau de l'Heure; he enumerated the various signals emitted, the position of the personnel, which with regard to the Director is not well defined, and other matters. The *Bulletin Horaire* owes its existence to the new Bureau under his directorship.

The statement was not concluded when the Commission adjourned at 11 a.m.

*Second Meeting, July 10th*

M. Bigourdan continued his report. Various questions were put by him.

- (1) How long to keep the tapes in the B.I.H.
- (2) How long to keep the archives in the B.I.H.
- (3) Distribution of the *Bulletin Horaire*.
- (4) Payment of postages by the Commission.
- (5) Reduction of size and contents of the Tables.

The President remarked that such questions should be left to the discretion of the Director.

The President then made a personal explanation, to the effect that he had found that Article No. 6 of the Regulations had been violated, in respect to a letter written by the Director to the Superintendent of the Naval Observatory, Washington, and published in the Annual Report, 1927 (*Bulletin Horaire*, t. III, No. 38), asking for a change in the American type of signals. The President was not informed of the contents of this correspondence and disapproved of its terms. He had requested an explanation from the Director of the Bureau but none had been furnished. In view of this the President had tendered his resignation to the Executive Committee, with a letter of explanation.

*The Systems of Time Signals* adopted at the Cambridge meeting appeared to be fully satisfactory. H.M. Astronomer at the Cape had interested himself in the matter and secured the necessary apparatus for emitting new international signals from the Cape; further the Japanese authorities are in favour in principle of unification of signals.

M. Bigourdan asked the members to consider a scheme he had prepared for a new type of signals. His scheme is the following: after the preliminary signals the first minute begins with one dash followed by the usual number of dots, the second minute with two dashes, the third with three dashes, etc. These dashes give an indication of the numeral order of the minute.

The President spoke with regard to the Regulations. In three years it would be necessary to revise the existing regulations which subsist until 1931. He had formed the opinion that they required modification in definite respects. The Director of the Observatory of Paris ought to be the Director of the Bureau, delegating such portion of his work as he saw fit to two assistants, the one for meridian work and the other for radio-telegraphic work. Further it was not the desire of the I.A.U. to make the Bureau an experimental laboratory. If these views were approved, he would submit a draft of new regulations which might be included in the Report of the Commission to the Executive Committee.

Sir F. Dyson inquired whether the Commission had been asked to prepare such a Report for the Executive Committee.

The President said that was only a question of form and the Commission would undertake to submit the new draft regulations with all necessary tact.

M. Deslandres stated that in his opinion economies could be made if the B.I.H. were attached to the Observatory of Paris.

On a vote taken the majority was in favour of a combined directorship.

The resolutions for report to the Executive Committee were then adopted, viz.:

1. The President has examined the details of expenditure for the past three years and certifies that all is in order according to the Regulations.
2. The Commission has taken into consideration the form of its Regulations which subsist until 1931, and is of opinion that they require change in several

particulars. Accordingly it has prepared a draft of regulations expressing its views and transmits it herewith to the Executive Committee for consideration.

3. The funds allowed for the past triennium have been exceeded and an increase of subvention is required. The sum asked for is 75,000 frs. for each of the three years 1929, 1930, 1931, together with a supplement of 13,000 frs. for the current year.

4. In view of the extent to which the services of the Bureau assist geodetical work, the Commission considers that it would be reasonable that the President of the Union should approach the President of the Union of Geodesy and Geophysics, and ask him to take into consideration whether the Geodetical and Geophysical Union could give some assistance towards the expenses of the Bureau.

#### *Third Meeting, July 12th*

The Draft of the Regulations as prepared by the President was read and considered. Sir Frank Dyson doubted if the draft represented the view of the Commission: the business of the Bureau should be the reception, comparison, and correlation of different signals.

M. Bigourdan stated that the work of the Director was very heavy; he had not asked to be Director, but since he was appointed great developments had occurred; there was previously no publication of any sort; and now there was a Bulletin, new and varied systems of signals had been introduced.

M. Deslandres said that an administration under three different heads was in principle a bad one.

The President reported the view of M. Baillaud that the direction of the B.I.H. and Paris Observatory should be absolutely united.

Sir F. Dyson agreed that the Director of the Observatory should delegate his work to two others, but held that no payment should be made.

M. Deslandres expressed the opinion that no increase of sum allocated to the Director of the B.I.H. need be contemplated. The sum which was given to the Director would be distributed to the two assistants.

The Draft Regulation in question was then put to the vote, viz.:

"The Director of the Bureau may nominate two assistants, one expert in meridian astronomy and the other in radiophysics, to whom he may delegate such parts of his duties as may seem good, and who shall be paid out of the funds allowed to him personally."

On a vote taken, this was rejected.

Sir F. Dyson expressed the opinion that the types of signals should be left to the French Government.

The remaining Draft Regulations were adopted for incorporation in the Report.

1. Il est créé une Commission Internationale de l'Heure, ayant pour objet l'unification de l'heure par l'envoi de signaux radiotélégraphiques ou autres, qu'il s'agisse de signaux scientifiques de haute précision ou de signaux ordinaires, répondant aux besoins de tous.

2. La Commission Internationale de l'Heure (C.I.H.) comprend un "Bureau" qui est chargé de travaux déterminés. Le "Bureau" (B.I.H.) est composé du Président de la Commission, d'un Vice-Président, et d'un Secrétaire Général qui exerce aussi les fonctions de Directeur du travail du Bureau.

3. Le Président est désigné de la même manière que les Présidents des autres Commissions de l'Union. Le Vice-Président est élu par la Commission elle-même, après la nomination du Président.

4. Le siège du Bureau est établi à Paris et le Directeur de l'Observatoire de Paris est le Directeur du Bureau et le Secrétaire Général de la Commission.

5. La Présidence de la Commission est donnée à un pays autre que la France.

6. Le Directeur de l'Observatoire de Paris doit mettre gratuitement à la disposition du Bureau tous les locaux qui lui sont nécessaires pour tous ses besoins.

7. Les travaux incombant au "Bureau" sont les suivants:

(1) Emettre les signaux horaires, soit réguliers, soit occasionnels, dont la transmission est faite aux frais du Gouvernement Français par les postes de la Tour Eiffel, de Bordeaux (Lafayette) ou autres. Ces signaux sont basés sur les observations astronomiques de l'Observatoire de Paris, en tenant compte aussi des signaux horaires radiotélégraphiques qui sont reçus d'autre part en provenance d'autres Observatoires.

Les fonds du Bureau ne doivent pas être appliqués aux frais de transmission.

(2) Recevoir les signaux horaires radiotélégraphiques provenant de toute autre source, soit à l'oreille, soit par enregistrement, les discuter couramment et les comparer entre eux.

(3) Publier ces comparaisons, et toute matière s'y rapportant, avec tous les détails qui paraîtront utiles, ou coopérer à des publications analogues faites par d'autres Établissements. Le Bureau devra en outre communiquer sur demande, autant que cela sera possible, tous les résultats qui n'ont pas encore été publiés.

8. Les genres des signaux transmis doivent tenir compte raisonnablement des besoins de tous, qu'il s'agisse de particuliers, d'horlogers, d'Administrations de Chemins de Fer ou d'autres Services Publics, de navigateurs, d'explorateurs ou d'hommes de Science, soit astronomes, soit autres. Les genres principaux et permanents de ces signaux (dont il a été fait mention ci-dessus § 7 (1)) sont déterminés par la Commission elle-même.

9. Quant aux signaux transmis par des postes autres que ceux dont il est question au § 7 (1), la Commission doit les prendre en considération, en ce qui concerne leur convenance et leur distribution. La Commission est chargée d'exercer son influence, par elle-même et par ses membres, pour assurer la constitution de ces signaux conformément aux types les plus convenables.

10. Le Directeur du Bureau a toute latitude pour admettre à l'étude détaillée de ses méthodes autant d'étudiants qu'il le jugera convenable, et pour les charger, à sa discrétion, de travaux déterminés, avec ou sans rémunération.

11. Le Directeur du Bureau, en sa qualité de Secrétaire Général du C.I.H. rédige la correspondance, d'accord avec le Président. Il conserve les archives et le matériel appartenant au Bureau.

12. Le Vice-Président prend part à toute délibération du Bureau, et remplit les devoirs appartenant au Président, en cas de défaut de celui-ci.

13. Les fonds qui sont alloués au C.I.H. par l'Union Astronomique Internationale doivent être employés aux objets suivants:

(1) frais d'administration et de publication,

- (2) achat et entretien du matériel nécessaire au B.I.H.,
- (3) indemnité allouée personnellement au Secrétaire Général en sa qualité de Directeur du B.I.H.,
- (4) subventions ou rémunérations dues, soit pour des travaux de calculs et d'observations, soit pour les expériences ordonnées par le C.I.H.

14. Le Directeur est responsable de l'emploi des fonds.

15. Le Directeur doit préparer chaque année un Rapport Annuel sur les travaux accomplis par le Bureau pendant l'année précédente, et le soumettre au Président.

Le Rapport Annuel est publié et communiqué à titre d'information aux membres de la Commission.

16. Le Directeur doit préparer chaque année un projet de dépenses pour l'année suivante, et le soumettre au Président. Après que ce projet a reçu l'approbation du Président, il doit être communiqué à titre d'information aux membres de la Commission.

Ce Budget doit indiquer le montant des sommes à affecter à chacun des objets visés ci-dessus No. 13.

17. Le Président doit examiner de temps en temps les détails des dépenses et rendre compte de la situation des fonds à la Commission à l'occasion de sa réunion régulière. La Commission doit faire figurer ce compte rendu, avec ou sans remarques, dans son rapport à l'Union Astronomique Internationale.

18. Le Président doit vérifier que le règlement a été observé.

Le Secrétaire Général de l'U.A.I. doit payer au Président les sommes allouées à la Commission qui les transmet au Directeur pour les besoins du Bureau qui sont conformes au règlement.

#### *Fourth Meeting, July 14th*

At an adjourned meeting M. Bigourdan explained in detail the new system of signals which he had devised. No decision was taken on its merits, but it was decided that the proposal should be published in the *Bulletin Horaire*.

#### *Commission 33. (STATISTIQUE STELLAIRE.)*

Professor Dr C. V. L. Charlier presided and presented the Report. Dr K. G. Malmquist was elected Secretary.

Proposals I and II were discussed and the following recommendation was adopted:

"That the following tables be executed, provided the financial situation of the Union will admit the expense of calculation and printing or that the cost be borne by a gift from some foundation.

"1. Tables for conversion of equatorial into galactic coordinates. The tables should give, with an accuracy of a hundredth of a degree, the values of the galactic longitude and latitude corresponding to every whole degree in right ascension and declination. Regarding the position to be adopted for the galactic plane some difficulty is caused by the fact that the values of the coordinates of the galactic pole, as determined from different celestial objects, vary to some extent. It will be most suitable to use a fixed pole for the computations and to add