

INTERNATIONAL ASTRONOMICAL UNION

TWENTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE

LIEGE, BELGIUM

Friday, 28 June to Monday, 1 July 1963

Summary Report

The meetings were held by invitation of Professor P. Swings in the Salle des Professeurs at the University of Liège in Liège, Belgium. Sessions were held as follows:

Friday, 28 June: 9:30 a.m. - 12:30 p.m.; 2:30 p.m. - 6:00 p.m.
Saturday, 29 June: 9:30 a.m. - 12:30 p.m.
Monday, 1 July: 9:30 a.m. - 12:30 p.m.; 2:30 p.m. - 5:00 p.m.

The following were present: V. A. Ambartsumian (President); L. Goldberg, R. M. Petrie, B. Sternberk, R. H. Stoy (Vice-Presidents); D. H. Sadler (General Secretary); J. H. Oort (former President); J.-C. Pecker (Assistant General Secretary). Miss Dorothy Bell attended as Assistant Secretary.

Apologies were received from Vice-Presidents, Y. Hagihara and G. Haro, both of whom were prevented from attending through illness.

A further session of the Executive Committee was held on Tuesday, 2 July to discuss the subject of the "Training of Astronomers". The following also participated, by invitation, in this session: H. Haffner, M. G. J. Minnaert, E. L. Schatzman, P. Swings.

Introductory note: The following report is intended primarily as a record of the decisions taken by the Executive Committee at the above meetings; it is not intended to be a complete record of all the proceedings, but it does contain accounts of the discussions when these are considered of some permanent value as a record. For some items, particularly Nos. 11, 14, 15, 17 and 19, the report aims to give only the general spirit of the discussions.

For convenience of reference, the report on each item is recorded under the item number in the following list of agenda, independently of the order in which it was taken at the meeting. The notes showing the revision of the Statutes and By-laws (Item 6); the notes on Commissions and their Membership, including the Report to the Executive Committee on the Formation of a Commission on Spectral Classification, (Item 7); the Notes for the Guidance of Organizers of Joint Discussions (Item 8); detailed notes on symposia and colloquia (Item 9); notes on Space Contamination (Item 14); documents on the Future Structure of the ICSU (Item 15); the memorandum by the General Secretary on the Future Policy of the Union (Item 19); and the memorandum on the International Scientific Unions and the Scientific Committees of the ICSU (Items 15-19) are not included in this Report as circulated; they will, however, be attached to the copy of the Report kept in the archives of the Union, together with such other items of agenda as may be relevant.

p.t.o.

Agenda

	Page
1. Opening by the President	3
2. Report by the General Secretary	3
3. Special Nominating Committee	4
4. Adherence of Member Countries	4
5. Future Organization of the Union	5
6. Revision of the Statutes and By-laws	5
7. Commissions and their membership	5
8. Twelfth General Assembly	7
9. IAU Symposia and Colloquia	9
10. Other scientific meetings	11
11. Publications	12
12. Distribution List	12
13. Specific projects	13
14. Space contamination	15
15. The International Council of Scientific Unions	17
16. CIG and the International Quiet Sun Years	18
17. Relations with COSPAR	19
18. Inter-Union Commissions	19
19. Discussion on the future policy of the Union	20
20. The teaching of astronomy	21
21. Thirteenth General Assembly, 1967	21
22. Representation and formal items	22

INTRODUCTION

Before the opening of the first session on Friday 28 June, the members of the Executive Committee were welcomed by Professor P. Swings who expressed his great pleasure that the Executive Committee was meeting for a third time in Liège. He referred to the sad loss which astronomy in general, and the Union in particular, had suffered through the death of Otto Struve and asked that he be associated with the Union's expressions of sympathy.

1. Opening by the President. In opening the meeting the President referred to the unavoidable absence of Professor Hagihara and Dr. Haro who were both prevented from attending through illness. He requested the General Secretary to send telegrams expressing the good wishes of the Executive Committee for their speedy recovery.

He went on to speak of the great loss that the Union had suffered through the death of Otto Struve; he proposed, and the Executive Committee agreed, that the General Secretary should send a suitable message to Mrs. Struve.

The President briefly referred to the last meeting of the Executive Committee and to the scientific meetings which have taken place since. In particular, he said that IAU Symposium No. 20, "The Galaxy and the Magellanic Clouds", in Australia, was one of the best symposia he had ever attended.

2. Report by the General Secretary. The General Secretary presented a verbal report under three main headings:

(a) Administration and finance. The General Secretary called the attention of the Executive Committee to the symbolic device on the covers of the folders containing the agenda materials. He said that this was a rough mock-up of a symbol which he suggested might be adopted by the Union. It would be used in different sizes on notepaper, title pages and covers of IAU publications. After discussion the general principle of the symbol (consisting of inter-linked letters IAU and UAI) was approved, but it was suggested that professional advice should be sought before a final design was adopted.

The General Secretary reported that, in spite of this being a year mid-way between General Assemblies, the administrative work of the Union had been rather heavy. It was clear that there must be a larger staff after August 1964 and that it would be most desirable to have an Administrative Secretary who could take complete charge of many of the administrative matters which now have to be done by the General Secretary. He paid a well-deserved tribute to the work of the Assistant Secretary, but said that he could not have got through the year without the Assistant General Secretary in respect of symposia and publications. He referred to various projects which had been undertaken, particularly the Notes for the Guidance of Presidents of Commissions.

The General Secretary said that it was not possible, in the middle of a three-year period, to give any precise statement on the financial position in relation to the budget adopted in Berkeley. However, he estimated that, at the present level, there would be approximate equality between expenditure and income, although neither would be in exact accord with budget estimates. There

has been increased expenditure on special projects, not foreseen at the time of the General Assembly, and on administration; but, in general, the amount spent on travel expenses for symposia had been less than anticipated.

(b) Relations with the ICSU. The General Secretary explained that an increasing amount of his time was being taken up by correspondence and discussions regarding the relationships with the International Council of Scientific Unions and other organizations. There was no doubt that the increasing number and complexity of these organizations requires careful attention and consideration. This is another argument for a full-time Administrative Secretary who can ensure that co-operation is efficient without unnecessary duplication. The policy of the Union on these matters is discussed under Items 15, 16 and 17.

(c) Future policy and organization. The General Secretary spoke briefly about the problems of future policy and organization, but the main discussion was left until Item 19.

3. Special Nominating Committee. The President presented an interim report to the effect that the Special Nominating Committee had reached agreement in respect of the nominations for President, General Secretary, and Assistant General Secretary, as follows: President - Professor P. Swings; General Secretary - Dr. J.-C. Pecker; Assistant General Secretary - Dr. A. Reiz (or, failing him, Dr. L. Perek). He explained that the Special Nominating Committee could not proceed with the nominations for the four Vice-Presidents until it knew whether the above would be willing to accept nomination. The Executive Committee authorized the President and the General Secretary to enquire from Professor Swings, Dr. Pecker, and Dr. Reiz whether they would be willing to accept nomination for the offices named.

In regard to the nomination of Vice-Presidents the Executive Committee decided that arrangements should be made that one of the four Vice-Presidents to be elected in 1964 should serve for only one term of three years, so that in future three new Vice-Presidents would be elected at each General Assembly. The Special Nominating Committee would accordingly be asked to take this into consideration in formulating their proposals.

4. Adherence of Member Countries. The General Secretary reported on his correspondence with Dr. Haffner and Professor Fricke regarding the adherence of the German Federal Republic. The Adhering Organization would be the Council of West German Observatories, but formal approval had not yet been received from the Deutsche Forschungsgemeinschaft, the organization through which the German Federal Republic adheres to the ICSU. The General Secretary was authorized to seek the approval of the Executive Committee by correspondence upon receipt of the formal application.

Although no formal application had been received, the President said that Indonesia wished to adhere to the Union. The General Secretary agreed to supply full information to Dr. Pik Sin The.

Regarding the question of the adherence of developing countries, the General Secretary reported that the ICSU had approached some 30 or 40 newly independent countries regarding adherence to the ICSU, in groups or individually. He raised the question of the attitude that the IAU should adopt if many of these countries applied for membership to the IAU. It was thought unlikely that they would, and it was agreed to take no action until applications were received.

./.

5. Future Organization of the Union. The General Secretary reported that, in accord with the decision of the twenty-third meeting in Erevan, the main decisions on the future organization of the Union had been circulated to all Adhering Organizations and also published in Information Bulletin No. 9. As a result only four replies had been received from Adhering Organizations, none of which contained any substantial criticisms. Moreover, the comments of members of the Committee on Future Structure were generally favourable.

The Executive Committee accordingly formally confirmed the decisions of the twenty-third meeting as regards future structure and instructed the General Secretary to present them to the twelfth General Assembly for approval.

6. Revision of the Statutes and By-laws. In anticipation of the confirmation of the decisions on the future structure, the General Secretary, assisted by the Assistant General Secretary, had prepared draft revisions of the Statutes and By-laws for consideration by the Executive Committee. These were approved with minor amendments. The Statutes, as revised, will be formally communicated to Adhering Organizations for consideration at the twelfth General Assembly.

Some consideration was given to possible amendments to the By-laws that might be necessary as the result of the adoption of changes in the structure of the International Council of Scientific Unions. It was agreed to defer this matter until after the General Assembly of the ICSU and, if necessary, to agree upon changes by correspondence.

7. Commissions and their Membership.

(a) Action on previous suggestions. In accord with the decisions made at the twenty-third meeting (see Summary Report Item 6), the General Secretary consulted the Presidents and Vice-Presidents of certain Commissions regarding the suggested re-organization of Commissions. He presented a full report on and analysis of the replies received. The decisions of the Executive Committee are given under the following three headings:

(i) Committees of the Executive Committee. It was confirmed that Commissions 5, 6 and 38 should become Committees of the Executive Committee, which would be appointed by and responsible to the Executive Committee; their reports would be attached to the report of the Executive Committee.

It was emphasized that this change would in no way diminish or dilute the importance of these Commissions.

In regard to Commission 6, it was noted that a suggestion had been made that the Telegram Bureau might be directed from the Administrative Office. The Executive Committee agreed that the President of the Commission should be asked to consider whether the Commission should be continued or dissolved completely.

(ii) Technical Committees. After a thorough discussion of the points of view expressed in replies from Presidents, the Executive Committee agreed that it was at present not justified in introducing a new category of "Technical Committees". Commissions whose work was mainly concerned with techniques should endeavour to combine with other Commissions in regard to the organization of scientific meetings, should consult with other Commissions to avoid gross overlap in subject

in preparation of Draft Reports, and should, where possible, arrange to transfer responsibility for certain aspects of the subjects investigated to the Commissions primarily concerned with those subjects.

The possibility of emphasizing the special character of these Commissions by a change of title was also suggested; in particular, Commission 40 might become "The Techniques of Radio Astronomy".

It was agreed that the General Secretary should convey the substance of this discussion to the Presidents of the Commissions concerned, with a request that they consider taking appropriate action during their meetings in Hamburg.

^{part/} (iii) Combination of Commissions. The Executive Committee considered the possible combination of Commissions 4 + 7 + 17; Commissions 10 + 12; Commissions 16 + 17 and Commissions 19 + 31. In the light of the opinions expressed by their Presidents and Vice-Presidents, it was agreed to make no recommendation in regard to combining Commissions 4 and 7 or Commissions 10 and 12.

In respect of Commissions 16 + 17, the Executive Committee expressed a strong wish that the whole study of the Moon, excluding only the motion of the Moon, should be the responsibility of a single Commission. It therefore instructed the General Secretary to request Commissions 16 and 17 to re-arrange their functions accordingly. It felt that the theory of the motion of the Moon belonged more properly to Commission 7, and the ephemerides to Commission 4, but some overlap was inevitable and not necessarily undesirable.

There are clearly strong reasons for combining some of the work of Commissions 31 and 19 and enlarging the latter to deal with the whole subject of "The Rotation of the Earth"; Commission 31 would then be concerned primarily with chronometry and the dissemination of time signals. However, the Executive Committee agreed that the two Commissions should be asked to consider their future spheres of activity during their meetings in Hamburg.

(b) Commission on Spectral Classification. Dr. Petrie presented a full report on the proposal that the former Sub-Commission 29(c) on Stellar Classification should become a full Commission. It was agreed that a new Commission, No. 45, should be formed on this subject, but much discussion took place on the scope of the Commission and on its title. It was finally agreed to recommend to the General Assembly that a new Commission, No. 45, on "Spectral Classifications and Multi-band Colour Indices" be created, largely to take over the work of the former Sub-Commission 29c. It further agreed to request the assistance of the present Working Party of Commission 29 on Stellar Classification in preparing proposals for the initial Organizing Committee and membership of the Commission.

(c) The Inter-Planetary Medium. It was agreed in Erevan to consider setting up a Commission on the Inter-Planetary Medium, after consultation with the Presidents concerned. However, Dr. Goldberg pointed out that the Inter-Planetary Medium was essentially an extension of the solar atmosphere and could not be fully discussed without reference to solar activity. It was therefore agreed that the President of Commission 10 should be invited to extend the activities of his Commission to include the Inter-Planetary Medium. If he agreed, the Commission would

be re-named "Solar Activity and the Inter-Planetary Medium", and its Organizing Committee and membership would be correspondingly enlarged.

(d) Organizing Committees. The General Secretary reported that some Presidents had complained that their Organizing Committees were not taking an active part in the work of their Commissions. This was probably due to inexperience, but the substantial point was made that the newly elected Presidents and Vice-Presidents should have a voice in the choice of members of their Organizing Committees. It was agreed that nominations for future Presidents and Vice-Presidents should be made by the Executive Committee at its meeting immediately prior to the General Assembly, so that they could be announced to the Commissions during their administrative meetings.

8. Twelfth General Assembly. The General Secretary reported that the main features of the twelfth General Assembly would follow those adopted for the eleventh General Assembly in Berkeley in August 1961. A Preliminary Programme had been produced and given a wide circulation; all local arrangements in Hamburg seemed to be going well. He further reported that Dr. Haffner had informed him that not only would there be adequate funds to cover the whole of the local organization, but there would probably be a sum of approximately \$25,000 available for travel grants. It was agreed that the General Secretary should discuss with Dr. Haffner how best the Union could assist the Local Organizing Committee in the administration of such travel grants.

General Arrangements. The General Secretary summarised the general arrangements in Hamburg and said that he and Miss Bell proposed to visit Hamburg in October or November to discuss the detailed organization with Dr. Haffner. He asked the Executive Committee to confirm that it wished to continue unchanged its policy in respect of:

- (i) Invitations to non-Members;
- (ii) Restriction to not more than one registered guest for each participant (Member or Invited Guest);
- (iii) Insistence on adherence to an announced schedule for invitations and notification of participation.

The Executive Committee signified its agreement to the continuation of this policy.

Invited Discourses. Consideration was given to the choice of speakers for the Invited Discourses. It was first confirmed that Professor J. H. Oort should be invited to speak on some aspect of Galactic Research. It was then agreed that Dr. A. B. Severny should be invited to speak on Magnetic Fields of Sun and Stars, and Dr. L. Goldberg on Space Astronomy. If, for any reason, one of these three should not be able to accept the invitation, the General Secretary was authorized to invite Dr. J. F. Denisse to speak on the Inter-Planetary Medium.

Joint Discussions. In response to a request for proposals for Joint Discussions, sent to Presidents of all Commissions in December 1962, the General Secretary reported that a number of suggestions had been received. One of these, on "Multiple Stars and Associations", had essentially been withdrawn and was not considered further.

In addition, the General Secretary suggested that a Joint Discussion, or a meeting of similar nature, might be held on "The Training of Astronomers", and that a joint meeting (which might become a Joint Discussion) of Commissions 4, 7, 19 and 31 would be necessary to discuss the report of the Working Group on Astronomical Constants (see Item 13(f)).

It was agreed to proceed with the organization of the following Joint Discussions:

A. Commissions 33, 34, 37, 40 and others. "Local Structure and Motions in the Galaxy". Suggested Organizing Committee to consist of A. Blaauw (Chairman), B. J. Bok or L. Perek (Commission 33), and Presidents or Vice-Presidents of other Commissions interested.

Subject matter to include: Interstellar Matter in the Vicinity of the Sun, Stellar Distribution, Stellar Kinematics, and Implications for Galactic Dynamics. Two sessions will be required to cover this wide field adequately.

B. Commissions 27, 34, 37, 40 and others. "The Orion Nebula". Suggested Organizing Committee to consist of G. H. Herbig (Chairman), S. B. Pikelner, G. Westerhout, K. Wurm.

Subject matter to include: Radio Observations, Structure and Kinematics, Variable Stars, Time-scale and Theory, Colour-magnitude diagram, etc.

C. Commissions 42, 26 and others. "Close Binaries". This was originally suggested by Dr. J. Sahade as a method of doing homage to the memory of Otto Struve, and it has been strongly supported by Dr. J. E. Merrill, President of Commission 42.

The Organizing Committee would presumably have Sahade as Chairman and Merrill as a member.

Subject matter to include: Fields of Eclipsing Binaries, Spectroscopic Binaries, and Stellar Evolution.

It was originally suggested that the proceedings of the Joint Discussion should be published as a memorial volume to Otto Struve; the Executive Committee agreed that this was not very desirable and agreed instead that the report of the proceedings of the Joint Discussion, printed in the Transactions, should be associated with the memory of Otto Struve.

D. Commissions 12 and 36. "Theory of Aerodynamical Phenomena in Stellar Atmospheres". Suggested Organizing Committee to consist of R. Michard and C. de Jager as Presidents of Commissions 12 and 36.

Two sessions will be required.

E. Commissions 40 and 28, with 33, 34 and 43. "Radio Galaxies". The Organizing Committee would presumably be formed by the Presidents or Vice-Presidents of the Commissions most directly concerned.

It was provisionally agreed that Joint Discussions A and D should be held simultaneously on the same day, one session in the morning and another in the afternoon. Joint Discussions B and C would be held simultaneously, with one session

only. Joint Discussion E would be held on another afternoon at the same time as the joint meeting, or Joint Discussion, on Astronomical Constants.

The General Secretary was requested to communicate with the Presidents of the Commissions concerned to crystallize the proposals in respect of the matters to be discussed and the composition of the Organizing Committees. A draft, "Notes for the Guidance of Organizers of Joint Discussions", prepared by the General Secretary, was approved with minor amendments.

The Executive Committee was rather concerned about the concentration of Joint Discussions in certain limited fields of research. The General Secretary was accordingly asked to suggest to the Presidents of Commissions organizing the Joint Discussions that they should restrict the scientific meetings of their Commissions.

Public Address. Consideration was given to the choice of an astronomer to give a public address during the twelfth General Assembly. It was agreed to invite Professor M. Schwarzschild to do this. He would be introduced by either Professor Heckmann or Dr. Haffner. If Professor Schwarzschild was unable to accept this invitation, it was suggested that Professor B. Strömngren should be invited.

9. IAU Symposia and Colloquia.

Past Symposia. The Assistant General Secretary made brief verbal reports on the three symposia that had been held recently, namely, Nos. 19 (Site Testing), 20 (The Galaxy and the Magellanic Clouds) and 21 (The System of Astronomical Constants). The President remarked that, in his opinion, Symposium No. 20 had been extremely successful, and the General Secretary was able to report briefly on the conclusions reached at Symposium No. 21. A summary of the main features of the symposia that had been held since June 1962 had been prepared by the Assistant General Secretary and is attached to the file copy of this record.

Scheduled Symposia. The Executive Committee considered the similar information prepared by the Assistant General Secretary in relation to Symposia Nos. 22 to 25, at present in course of organization. The arrangements for these Symposia were confirmed without modification. However, it was suggested that, on the Organizing Committee for Symposium No. 25 (The Theory of Orbits in the Solar System and in Stellar Systems), G. A. Merman might perhaps be replaced by T. A. Agekian; the Assistant General Secretary was asked to consult Professors Brouwer and Hagihara.

Financial Statement. The General Secretary spoke briefly about the financial situation in regard to symposia, and reported that, on the whole, the money so far actually spent on symposia was rather less than that allowed in the budget. However, he was concerned about the relatively great distance of Thessaloniki from Hamburg which might require a rather larger grant from the IAU for travel expenses in connection with Symposium No. 25. The General Secretary was authorized, if necessary, to go beyond the maximum previously approved.

Future Symposia. The General Secretary suggested that the Executive Committee might draw up a list of topics suitable for future symposia so that these could be discussed with the Presidents of the appropriate Commissions and others, with a

p.t.o.

view to making adequate preparations for definitive decisions (including Organizing Committees, places and dates) to be made not later than at the end of the twelfth General Assembly. He pointed out that it was essential to make such preparations well in advance, although it was desirable that the final decisions should be made by the new Executive Committee to be appointed in Hamburg.

The following suggestions were made and provisionally accepted:

A. Radio Astronomy and the Galactic System. This was originally allocated No. 23 but was postponed because of the possible clash with Symposium No. 20. It had previously been accepted in principle by the Executive Committee, and it was agreed that it should now be held in 1965. Professor Oort had accepted to serve as Chairman of the Organizing Committee.

B. Abundance Determination in Stellar Spectra. This proposal came originally from Commissions 29 and 36 who suggested that the Symposium should be held immediately after the General Assembly, either in Varenna, Italy or Nijenrode, The Netherlands. The Organizing Committee would presumably consist largely of members of the Organizing Committees of the two Commissions, with Dr. de Jager as Chairman. (It was later noted that care should be taken to ensure that this Symposium would not conflict, in respect of dates, with the Italian symposia organized in connection with the "Giornate Galileiane".)

C. Instability Phenomena in Galaxies. This was suggested by the President who said he would like such a symposium to be held in Armenia sometime in 1965. A formal proposal would be submitted in due course by the U.S.S.R. Academy of Sciences.

D. Non-Stable Stars. This was also proposed by the President who said that a formal proposal for such a symposium, to be held somewhere in the U.S.S.R. in 1966, would shortly be made by the U.S.S.R. Academy.

E. The Construction of Large Telescopes. This proposal was supported by many members of the Executive Committee who felt that it would be opportune to hold such a symposium early in 1965. However, the President of Commission 9, Dr. I. S. Bowen, should be consulted in regard to scope and dates, as well as the composition of the Organizing Committee.

F. The Future of Radial Velocity Observations. It was agreed that Professor Ch. Fehrenbach, President of Commission 30, should be consulted about whether this subject should be discussed in a symposium, or might rather form the basis for a more restricted colloquium.

G. "Man in the Moon". No specific title was suggested for this symposium which would have as its main object a general discussion as to the astronomical results that could be obtained by putting a man on the Moon as compared with instruments. It was agreed that this was an important subject and that it would be desirable to continue to exchange views on the desirability, at some future time, of organizing a discussion that might guide the policy to be adopted in future explorations of the Moon.

./.

The Assistant General Secretary was asked to consult Presidents of appropriate Commissions and others, with a view towards defining more precisely subjects for discussion, Organizing Committees, places and dates. However, the Executive Committee approved the holding of B. (Abundance Determination in Stellar Spectra) if suitable arrangements could be made.

It was provisionally agreed to assign the following numbers to these symposia, on the assumption that they would be held in the order given:

- No. 26 - B. "Abundance Determination in Stellar Spectra" - September 1964
- No. 27 - E. "The Construction of Large Telescopes" - Early 1965
- No. 28 - A. "Radio Astronomy and the Galactic System" - 1965
- No. 29 - C. "Instability Phenomena in Galaxies" - 1965

Colloquia. It was noted that the following colloquia, to be organized by Commissions, largely independent of the Executive Committee, were being considered:

(i) Commissions 27 and 42. "Variable Stars", to be held in Bamberg in 1965. This would represent a continuation of two successful symposia organized by Dr. W. Strohmeier at the Remeis Observatory in 1959 and 1962. Such a meeting would seem to fit in admirably with the Union's new concept of colloquia.

(ii) Commissions 26, 33 and 37. "Multiple Stars and Associations", to be held sometime in 1965; no place yet suggested. (This replaces the one suggested for Herstmonceux in August 1964, postponed because of possible conflict with the meetings of the Commissions themselves in Hamburg.)

(iii) Commission 17. There is a suggestion that Commission 17 intends to organize a Second Conference on Lunar Topography in the autumn of 1963 in France. Further information is being sought.

10. Other Scientific Meetings.

A. Joint Symposia.

(i) The Assistant General Secretary reported that the Symposium on "Extra-Terrestrial Life", organized by COSPAR with the participation of the IAU, was held in Warsaw from 8 to 10 June 1963. Apparently the symposium was extremely successful; the IAU representative on the Organizing Committee was Dr. A. Dollfus.

(ii) The General Secretary reported that full agreement had been reached with the International Union for the History and Philosophy of Science regarding the Symposium on the History of Astronomy to be held in Hamburg immediately prior to the twelfth General Assembly. It was agreed formally to appoint Professor P. G. Kulikovskiy, President of Commission 41, as the Union's representative on the Organizing Committee.

The General Secretary called the attention of the Executive Committee to the "Statement of IAU Policy in Respect of Participation in Joint Symposia" which he had prepared and used as a basis for the agreements with COSPAR and the IUHPS for the above symposia. This statement of policy was approved.

p.t.o.

B. Other Meetings. The Assistant General Secretary had produced a list of other astronomical meetings organized independently of the IAU. This list is attached to the file copy of this record. The Executive Committee noted in particular the arrangements for the symposia to be organized in connection with the celebration of the fourth centenary of the birth of Galileo, namely the "Giornate Galileiane", to be held in Italy in 1964. It was agreed that the Union should avoid conflict of dates with these meetings and should co-operate and participate to the fullest extent.

11. Publications. The General Secretary made a brief verbal report on the publication arrangements for Transactions of the IAU, Volumes XI and XII, and for Symposia volumes 14-21.

The Assistant General Secretary reported on the arrangements that were being considered for the publication of the proceedings of Symposia Nos. 22-25.

The Executive Committee considered the publication policy of the Union, particularly in connection with the publication of the proceedings of symposia, as discussed in the memorandum prepared by the General Secretary. Discussion took place on the relative merits of the five possible methods of publication specified on page 4 of the memorandum. It was agreed that the most satisfactory method, with a well-staffed Administrative Office, would be publication by the IAU, itself, independently of any publisher. If this is impracticable (as it clearly is at present), the Executive Committee thought that publication, on behalf of the IAU, by a single publisher should be considered; the publisher could either accept all the risks of publication, or alternatively, act as an agent for the Union and merely sell the publication on commission.

The Executive Committee realized that it was not practicable to put any of these procedures into operation during the next year, and requested the General Secretary and the Assistant General Secretary to investigate various possibilities in further detail. In the meantime, the arrangements for the publication of proceedings of symposia would proceed on an individual basis, as at present; preference would continue to be given to publication in non-commercial scientific journals.

The General Secretary reported that he had been requested by the Chairman of the Inter-Union Commission on Solar and Terrestrial Relationships to make arrangements for the publication of the IUCSTR Review Report. The account of the meeting of this Inter-Union Commission to be held in Tokyo in September would be incorporated in this Report. It was suggested that this could be treated in a manner similar to that for the proceedings of a symposium, and that it might be published in the first place in a scientific journal.

12. Distribution List. The General Secretary reported on the introduction of annual contributions towards supply and distribution of publications to the institutions on the Distribution List. Acceptances had been received, usually with payments for three years, from the majority of the institutions on the List. No replies had been received from some countries and only very few from others, in particular the U.S.S.R. Only one observatory had formally requested that distribution be continued even though they could not at present contribute.

It was agreed to continue distribution to all institutions on the Distribution List, but to send a suitable reminder to all those who had not replied about the end of the year. The President said that he thought that the contributions from institutions in the U.S.S.R. would probably come from a central agency.

As a result of the notice in Information Bulletin No. 10, four requests had been received for inclusion on the List, namely, from the Department of Astronomy of the University of Texas (Austin), U.S.A.; the Joint Institute for Laboratory Astrophysics, Boulder, Colorado, U.S.A.; the Astronomical Institute of Ankara University, Turkey; and the Flagstaff Station of the U.S. Naval Observatory, Flagstaff, Arizona, U.S.A.

It was agreed to add these institutions to the Distribution List.

13. Specific Projects.

(a) Grant to Commission 42. It was reported that, although the Executive Committee had agreed by correspondence to make a grant for the continued publication of the Eclipsing Binaries Circulars, no specific request had yet been received for payment.

(b) Bibliography of Astronomy, 1881-1898. The General Secretary referred to previous reports on this subject, and in particular to the recommendations made to the Executive Committee at its twenty-third meeting. He reported that the Astronomisches Rechen-Institut were unable to offer any assistance in the completion of this work, but that Dr. Kleczek, President of Commission 5, had offered to take over the whole work if suitable assistance could be made available to him. After some considerable delay, Dr. Dermul had now realized that there was no possibility of his being able to complete the work in Belgium, owing to his advanced age, his recurring illness, and the lack of support in Belgium. In these circumstances the Executive Committee came to the conclusion that the Union should, if practicable, take over responsibility for the completion of the project; in the first instance it agreed to ask Commission 5 to investigate the present status of the project and the amount of work required to bring it to a successful conclusion.

(c) "Les Observatoires Astronomiques et les Astronomes". The General Secretary reported that no progress had been made with the new edition of this publication and that he had not heard recently from Professor Bourgeois or Professor Dimitroff. He had accordingly not asked Adhering Organizations to supply information about observatories in their countries as called for by a resolution from Commission 5. The Executive Committee decided that the preparation of an authoritative list of astronomical observatories was a proper function of the Union, but that it could probably best be done by the Administrative Office. It was hoped that, when a fully-staffed Administrative Office became available, it would undertake the preparation of such a list. In the meantime, it was decided to take no further action.

(d) Venezuelan Instruments. In light of the fact that it had proved impossible to make any satisfactory contact with any scientific institutions in Venezuela, it was agreed that little further action could be taken to make the good offices of the IAU available to the Venezuelan Navy, in order that the fullest use may be made of their equipment. It was noted that the meridian circle and the PZT were being erected in Caracas, largely for prestige purposes,

p.t.o.

and that the new Director of the Cagigal Observatory was said to be unwilling to contemplate the transfer or sale of any of the equipment.

However, it was known that the Natural Sciences Department of UNESCO was interested in this problem, and the President said that he would discuss the matter when he visited UNESCO.

(e) Carbonaceous meteorites. The General Secretary reported that he had been able to put into contact the Natural Sciences Department of UNESCO, which had initiated this project, and Dr. M. H. Hey of the British Museum, who was willing to produce a catalogue. In the circumstances it seemed desirable to allow UNESCO to take charge of the preparation for an international convention regarding the conservation of carbonaceous meteorites.

(f) Working Group on Astronomical Constants. Although no formal report had yet been received, the Organizing Committee for Symposium No. 21 had requested the Executive Committee to appoint a Working Group to make recommendations to the twelfth General Assembly on the numerical values of a proposed new system of astronomical constants. A list of such constants was drawn up at the Symposium, but it was not practicable to assign definitive numerical values.

Accordingly, the Executive Committee appointed a Working Group on "The System of Astronomical Constants" with the following constitution and terms of reference.

1. Membership. The following will be invited to serve: Dr. W. Fricke, President of Commission 4, as Chairman; Professors D. Brouwer, A. Danjon, and A. A. Mikhailov; Dr. G. A. Wilkins as Secretary.

The Working Group is encouraged to consult institutions and individuals engaged on observations and studies relevant to the system of astronomical constants and their numerical values.

It may co-opt other members.

2. Terms of reference:

(a) The Working Group will prepare, in accord with the Resolutions adopted at IAU Symposium No. 21, numerical values of the constants of the system for consideration at the twelfth General Assembly of the Union to be held in Hamburg in August 1964.

(b) In so doing it will take into account decisions by other International Scientific Unions.

(c) The Working Group will report, in the first instance, direct to the General Secretary who will refer the recommendations to the relevant Commissions for consideration during their meetings. If the report is received by 25 March 1964, it can be included in the formal agenda for the General Assembly that will be circulated to Adhering Organizations and all Members.

The General Secretary was authorised to provide financial support for a meeting of the Working Group, if this should be necessary, up to a maximum of \$1500.

./.

(g) International Polar Motion Service. The Executive Committee noted that the Central Bureau of the International Polar Motion Service seemed to be working well under the directorship of Dr. Yumi and that Dr. B. Guinot, President of Commission 19, is proposing to visit Mizusawa in September for a full discussion of the operation of the Service. Good relations between the Japanese and French astronomers in this field now seemed to be re-established. The IAU is contributing towards Dr. Guinot's expenses.

(h) Southern Variable Star Charts. The Executive Committee formally confirmed the payment of \$500 to Mr. F. M. Bateson towards the cost of the next series of the Southern Variable Star Charts. It was understood that Mr. Bateson would submit a comprehensive programme to the President of Commission 27, together with an estimate of the costs of future series for consideration by the Finance Committee in Hamburg.

(i) Proposed Conference of Observatory Engineers. A suggestion was considered that the IAU might sponsor a conference of observatory engineers, that is, those directly concerned with the engineering design of spectrographs and similar auxiliary instruments. The Executive Committee decided that this was rather outside the normal function of the Union, but that the General Secretary might refer the matter to Commission 9 for consideration.

14. Space Contamination. The Executive Committee considered a report from the General Secretary on the present provision for examining possible harmful effects on astronomy of proposed space experiments. He referred particularly to the activities of the present IAU West Ford Committee and to those of the Consultative Group appointed by the President of COSPAR. He further reported that he had just heard from Professor van de Hulst that the latter group, at its meeting in Warsaw, decided to take "belts of needles" as one of the subjects to be mentioned in its first report, which was to be submitted to the International Council of Scientific Unions in November. It was noted that the "objective, quantitative studies" called for in the ICSU resolution would necessarily involve assessment by both optical and radio astronomers.

In view of the fact that nearly two years had lapsed since the ICSU had adopted its resolution requesting COSPAR to conduct investigations and to keep the Unions informed, and it was now only starting to work, the Executive Committee felt that it was essential that the IAU should, on this matter of vital interest to astronomy, maintain its own organization. It was noted that the General Secretary had not received any acknowledgement of, or replies to, his letters to the President of the Consultative Group informing him of the actions being taken by the IAU.

The Executive Committee considered the action it should take to ensure that the interests of astronomy are fully represented, and clearly stated, in respect of any proposed experiments or other activities in space that might have potentially undesirable effects on astronomical science. It recognised the valuable work of its present West Ford Committee and expressed the wish that this Committee should complete the analysis of the observations of the present West Ford experiment. However, it was realized that this Committee, set up in respect of a single experiment, was not of the optimum form to deal with the wider issues involved and did not adequately represent the Union in respect of the consultation called for in the final paragraph of the Berkeley Resolution No. 1. This Resolution, which

has had wide support, "appeals to all Governments concerned with launching space experiments which could possibly affect astronomical research to consult with the International Astronomical Union..."

The Executive Committee accordingly agreed to appoint a Committee on "Space Experiments with potentially undesirable effects on Astronomy", with the following terms of reference, subject to discussion with the proposed President.

1. Membership. The following will be invited to serve:

H. C. van de Hulst (as President)	J. W. Findlay
D. E. Blackwell	W. Liller
A. Boischot	V. B. Nikonov
W. N. Christiansen	

2. Terms of Reference. The Committee will:

(a) collect information upon and examine any proposed experiments or other activities in space, which could possibly affect astronomy, with a view to assessing whether they may have any potentially undesirable effects on astronomical science, particularly in respect of interference with astronomical observations;

(b) conduct, or arrange for, such studies and observations as may be necessary for this purpose;

(c) collaborate, as closely as practicable, with similar Committees or Working Groups set up by other organizations, particularly with the Consultative Group on Potentially Harmful Effects of Space Experiments set up by COSPAR at the request of the International Council of Scientific Unions;

(d) report to each meeting of the Executive Committee; between meetings, in case of urgency, it will report to the General Secretary.

The General Secretary was requested to discuss the formation, membership and terms of reference of the Committee with the proposed President, before inviting the members to serve. After the formation of the Committee he was instructed to clarify details of procedure with the President, and to make available such secretarial and other assistance as might be required.

A brief discussion took place on the latest information available about the experimental test belt of Project West Ford. It was noted that the belt had been successfully used for communication purposes and that it appeared that the characteristics of the belt were reasonably in accord with prediction. In spite of an appeal sent out by the General Secretary to observatories all over the world, and of the predictions made available by Harvard College Observatory, the only optical observations so far appear to have been made by observatories in U.S.A. It was agreed that no useful purpose would be served by taking any further action at the present time.

./.

15. The International Council of Scientific Unions.

(a) Agenda for the Executive Board. The Executive Committee formally considered the agenda for the fifteenth meeting of the Executive Board of the ICSU to be held in Vienna from 18 to 21 November 1963. It noted that most of the items of agenda had no direct relevance to the IAU and that most of the items that had relevance were being discussed under other items of the IAU agenda. The representatives of the Union on the Board, namely, the President and the General Secretary, would take note of the views expressed.

However, one item not otherwise covered is a proposal to form a Scientific Committee for Atmospheric Sciences Research. In this matter the IAU had been specifically requested by IUGG to express its views on the recent decision of the IUGG (to which the proposal was referred by the ICSU) NOT to support the proposal to create a Special Committee, on the grounds mainly that existing international associations of the IUGG already covered the field.

The Executive Committee agreed that the General Secretary should inform the Secretary-General of the IUGG that, in so far as the matter was relevant to the IAU and the Executive Committee was competent to judge, it did not see the necessity for creating a special Committee for this purpose.

(b) The Future Structure of the ICSU. A copy of the "Final Report of the ICSU Committee on Future Structure", and of the comments thereon by the General Secretary, had previously been circulated to the Executive Committee. In the discussion, attention was concentrated primarily on the following aspects of the Report:

- (i) the constitution of the ICSU Executive Committee;
- (ii) the representation of the Unions on the ICSU Executive Committee;
- (iii) the roles in the ICSU of the International Scientific Unions, on the one hand, and of the Special and Scientific Committees, on the other hand. (See also Item 17.)

Generally, the recommendations of the Report in respect of the abolition of the Bureau and the introduction on the (ICSU) Executive Committee of representatives of the National Members were supported. However, it was felt strongly that each Union federated in the ICSU (one of whose principal objects is "to co-ordinate and facilitate the activities of the International Scientific Unions in the field of the Natural Sciences") should have an absolute right to have its own nominated representative present at meetings of the (ICSU) Executive Committee, preferably as a full member and certainly as a consultant.

The Executive Committee noted that the detailed recommendations of the Report required a named representative of the Union to serve on the (ICSU) Executive Committee for four years; it would be difficult to ensure that such a representative continued to be a member of the IAU Executive Committee and would be impossible for him to be either the President or the General Secretary.

The General Secretary also pointed out that adoption of the recommendations of the Report would conflict with the existing By-laws of the Union, in regard to its representation on the ICSU Executive Committee; he proposed a draft amendment to the By-laws which could, if necessary, be submitted to the twelfth General Assembly in Hamburg in August 1964. This was approved in principle, for later

confirmation by correspondence, if the necessity for it should arise. However, the Executive Committee expressed its view that the method of representation should be changed to allow each Union, if it so wished, to be represented on the ICSU Executive Committee by either its President, or its General Secretary.

The Executive Committee also considered the implications of the Report in relationship to the future role in the ICSU of the Unions and of the Special and Scientific Committees; in particular, it noted the views expressed by some members of the ICSU Committee on Future Structure that the future of the ICSU lay with these Special and Scientific Committees. It recognised that Scientific and Special Committees were essential for some inter-disciplinary activities which were outside the field of any one Union and outside the normal scope of the International Scientific Unions. However, it considered that, within their fields of activity and within their scope, the International Scientific Unions were undoubtedly the best qualified and experienced organizations to promote international co-operation in the natural sciences. For this reason, it welcomed the view of the ICSU Committee (in recommendation No. 11) "that new Committees should only be created after a thorough enquiry, and if it is clear that no other satisfactory solution exists"; the Unions should first be strengthened, both financially and organizationally, to allow them to meet the increasing demands made upon them.

The General Secretary was requested to circulate a summary of the discussion to the General Secretaries of other International Scientific Unions, and to invite an exchange of views.

(c) General Assembly. The General Secretary reported that an Extraordinary General Assembly of the ICSU would be held in Vienna on 22-25 November 1963 to discuss the future structure of the ICSU. It would be followed by an Ordinary session of the General Assembly on 26-29 November.

The Executive Committee formally nominated the President to be its official representative, with power to vote, at these General Assemblies; the General Secretary would act as alternate. In view of the importance to the Union of the discussions on the future structure of the ICSU, it was further agreed that the IAU should be represented by the Assistant General Secretary, in addition to the President and the General Secretary.

(d) Activities Report. The General Secretary asked for guidance as to the type of activities report he should prepare for the General Assembly of the ICSU; he noted that, in the past, the reports from the Unions were neither presented nor discussed, and he wondered whether it would be desirable deliberately to introduce a controversial report that would require discussion. However, it was agreed that, on this occasion, the activities report should follow previous models.

16. CIG and the International Quiet Sun Years. The General Secretary made a brief report on the Union's representation on CIG and IQSY. He was able to report that support for the IQSY is growing rapidly and everything points to its being extremely successful. The newly appointed Administrative Secretary is efficient and the IQSY Notes, of which Nos. 1 and 2 have been distributed, appear most useful.

./.

At the request of the President of the ICSU, the President and the General Secretary ^{had} agreed to contribute, if necessary, a sum of \$500 annually for five years to the IQSY. However, it appears that this may not now be necessary; in any case, it is uncertain whether a contribution from the Unions has been authorized by the ICSU.

It was noted that the IUGG is very worried over the future of CIG, but this is closely connected with the future structure of the ICSU.

17. Relations with COSPAR. The General Secretary introduced a discussion on the relationships between the IAU and COSPAR; this had special relevance to the future policy of the Union, particularly in regard to the relative functions of the Unions on the one hand, and the Special and Scientific Committees of the ICSU on the other. He referred to the correspondence with the Union's representative on COSPAR, Professor H. C. van de Hulst, and summarized the IAU report that was presented to the COSPAR meeting in Warsaw on 3-11 June 1963.

The Assistant General Secretary, who had been in Warsaw, presented a verbal report on various aspects of that meeting. In particular, he said that the main International Space Science Symposium was, on the whole, not well organized, but the special COSPAR-IUB-IUBS-IAU symposium seemed to be very successful. Dr. Goldberg also expressed criticism of the organization of the main Symposium and commented on the different attitudes towards such meetings adopted by the IAU and COSPAR.

The General Secretary reported, in his capacity as a participant, on the COSPAR participation in IAU Symposium No. 21; this was not entirely successful because there seemed to be some difficulty in understanding precisely what the COSPAR representatives required from the IAU. He had, however, just been informed of the content of the report to COSPAR of the COSPAR ad hoc Committee on Astronomical Constants and noted that, in particular, it was critical of the overall accuracy of the astrometric positions of stars required for purposes of space research. He did not know what attitude the Bureau of COSPAR had taken towards this report.

The Assistant General Secretary mentioned that Professor van de Hulst was trying to introduce a long-term programme of specialized symposia into COSPAR, to replace the large International Space Science Symposia; but details of this plan, as finally adopted by the COSPAR Bureau, were not yet available.

It was agreed that no positive action could now be taken, but that the General Secretary should continue to discuss with Professor van de Hulst how best relationships with COSPAR could be improved and how unnecessary overlap could be avoided.

18. Inter-Union Commissions.

(a) Spectroscopy. Dr. G. Herzberg (President of the Triple Commission on Spectroscopy and one of the IAU representatives) submitted his resignation in order to conform to the policy of rotation of membership. The present IAU representatives are G. Herzberg and Mrs. C. Moore-Sitterly, with J. G. Phillips and G. Racah as correspondents. It was understood that the Triple Commission would welcome J. G. Phillips as a full member to replace G. Herzberg.

The Executive Committee therefore formally accepted Dr. Herzberg's resignation and the appointment of ^{Prof.} G. Phillips (subject to his willingness to serve) to replace him. The General Secretary was asked to express the Union's appreciation to Dr. Herzberg for his service.

(b) Frequency Allocations for Radio Astronomy and Space Science (IUCAF). The General Secretary reported that IUCAF was working well. The subject of Radio Astronomy had now been included on the agenda of the Extraordinary Administrative Conference of the International Telecommunication Union to be held in Geneva in October 1963. IUCAF is making elaborate preparations for a full presentation of the case for adequate reservation for frequencies. Professor Oort asked members of the Executive Committee to do all they could to ensure that their Government representatives were fully informed on this matter.

The IAU had been formally requested to consider the possibility of replacing its representative on IUCAF, Professor V. V. Vitkevitch, by another representative from the U.S.S.R. who would be able to attend meetings and put forward the views of the U.S.S.R. The Executive Committee agreed to invite Dr. G. G. Kuzmin to serve in place of Professor Vitkevitch.

(c) Solar and Terrestrial Relationships. It was noted that the IUCSTR proposes to hold an informal meeting, in co-operation with the Inter-Union Commission on the Ionosphere, in Tokyo on 4-5 September 1963. The proceedings of this meeting will be incorporated in the IUCSTR Review Report (see Item 11).

(d) Ionosphere. The General Secretary reported that the membership of this Inter-Union Commission is still not complete, but the IUCI is holding a formal meeting in Tokyo, with J. A. Ratcliffe as Acting Chairman and C. W. Allen as Acting Secretary.

19. Discussion on the future policy of the Union. The discussion of this item followed the points raised in the memorandum by the General Secretary on future policy, which is attached to the file copy of this record. Also attached is his memorandum on the International Scientific Unions and the Scientific Committees of the ICSU.

The General Secretary had suggested that perhaps the real question was the amount and nature of the leadership and organization which should be given by the Union to Adhering Countries, to observatories, and to individual Members. It was pointed out, however, that the National Committees of Astronomy in the Adhering Countries varied widely in composition and efficiency, so that it was not really practicable to achieve closer relations with them. However, the importance was stressed of maintaining contact with individual Members through Information Bulletins and elsewhere. Care should be taken to establish contact with those recently brought into the field of astronomy through space research and other activities. It should be made clear to them that, even though not Members of the Union, they are free to participate, on invitation, in symposia and other meetings of the Union, and to, at all times, communicate with the General Secretary and Presidents of Commissions requesting information and assistance.

The possibility of encouraging greater activity in the Commissions was discussed; for example, should Commissions be encouraged to initiate programmes of observation and research that rely on national support, and so perhaps obviate

the necessity for the creation of new organizations? The Executive Committee thought that, on the whole, the Commissions worked reasonably well and that there was no need, for example, for national or institutional representatives on Commissions; the principle of individual Membership should be preserved.

However, care should be taken to ensure that developing branches of astronomy were adequately represented in the Commission structure of the Union; for example, the suggestion was noted that the activities of Commission 10 might be enlarged to include the subject of the Inter-planetary Medium. A suggestion was also made that Commission 40 should be invited to extend its activities to include Radar Astronomy, working in co-operation with other Commissions.

Various opinions were expressed on the relative roles of the Unions on the one hand, and the Special and Scientific Committees of the ICSU on the other. It is recognized that the Scientific Committees of the ICSU were essential to cover activity in inter-disciplinary fields and to provide for organization which is not within the normal functions of the Unions. However, it was realized that the Unions themselves could do more if they were strengthened financially, administratively, and organizationally. In the case of the IAU, the planned strengthening of the Administrative Office was certainly a necessary preliminary step.

Reference was made to the unsatisfactory nature of some of the meetings organized by COSPAR, and it was agreed that efforts should be made to combine the experience of the Union with the enthusiasm of those engaged in space research.

The whole discussion was, by its nature, inconclusive. It might be summarized by saying that:

- (a) no drastic change of policy seemed required at the present time;
- (b) every effort must be continued to bring within the ambit of the Union all those engaged on astronomical research;
- (c) the scope and activities of the Commissions should be continually broadened to cater for new developments;
- (d) the Union should be strengthened, both financially and administratively, to allow it to meet the increasing demands made upon it;
- (e) the Union should endeavour to co-operate to the fullest extent with COSPAR and other organizations with the aim of decreasing overlap and increasing efficiency, particularly in the organization of meetings.

20. The Teaching of Astronomy. The report on this item is given as an Appendix to this record.

21. Thirteenth General Assembly. Discussion took place on the invitations that had been received in respect of the thirteenth General Assembly of the Union. A provisional decision was reached to recommend to the General Assembly that the invitation from Czechoslovakia be accepted. The General Secretary said that Professor Sternberk had satisfied him that adequate provision could be made in Prague for both meetings and living accommodation.

22. Representation and formal items.

(a) International Co-operation Year. The General Secretary reported that he had received a formal letter from the chairman of the Preparatory Committee on the International Co-operation Year of the United Nations asking for the support of the Union in connection with the activities and aims of the International Co-operation Year to be celebrated during 1965. The Union was requested "to consider possibilities within the framework of its own activities for focusing attention on existing international co-operation, and for increasing such co-operation." The Executive Committee asked the General Secretary to indicate to the Preparatory Committee the Union's willingness to co-operate as best it can in this project.

(b) Golden Jubilee of URSI. The General Secretary called the attention of the Executive Committee to the fourteenth General Assembly of the International Union of Scientific Radio to be held in Tokyo in September 1963. He noted in particular that this occasion represented the Golden Jubilee of URSI and therefore wondered if he should ask Dr. J. F. Denisse, the IAU's official representative at this meeting, to make a special gesture on behalf of the Union. It was agreed that no action should be taken in this connection.

(c) ADION. Dr. Pecker, in his capacity as President of the Association pour le Développement International de l'Observatoire de Nice, made a brief report on the creation and the aims of this new association, in so far as it was of interest and relevance to the IAU.

(d) Universal Declaration of Human Rights commemoration. The General Secretary reported that the Union had received a request from UNESCO "to commemorate, on 10 December 1963, the Fifteenth Anniversary of the adoption of the Universal Declaration of Human Rights", one of which is "the right to benefit from scientific advancement." The Executive Committee agreed that appropriate recognition should be given this occasion in the Information Bulletins.

At the conclusion of the meeting the President thanked members of the Executive Committee for their attendance and expressed a wish that they should put on record an appreciation of the generous hospitality provided by the University of Liège and particularly by Professor Swings.

Royal Greenwich Observatory
Herstmonceux

D. H. Sadler
General Secretary

July 1963

IAU/62

INTERNATIONAL ASTRONOMICAL UNION

TWENTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE

LIEGE, JUNE/JULY 1963

Appendix to the Summary Report

THE TRAINING OF ASTRONOMERS

A special session of the Executive Committee was held on Tuesday 2 July 1963 at 9:30 a.m. to discuss the Training of Astronomers. In addition to the members of the Executive Committee, Professors H. Haffner, M. G. J. Minnaert, E. L. Schatzman and P. Swings participated, by invitation. The following is a brief account of the discussion, of the principal points made and of the decisions reached; no attempt is made to record, in detail, the views expressed by the various speakers. Copies of the agenda for this session and of the memorandum "Training of Young Astronomers in Foreign Countries", prepared by Professor Minnaert, are attached to the file copy of this Report.

The President, in the chair, opened the meeting by welcoming the four invited participants. He then asked Dr. R. H. Stoy to open the discussion.

Dr. Stoy reviewed the overall problem of training astronomers. He recognized three separate stages, namely:

- (a) attracting suitably qualified students to take an interest in astronomy;
- (b) the basic training in mathematics, physics, and fundamental theoretical astronomy;

and (c) training in the actual techniques of observation and analysis.

The approach to these stages would necessarily be quite different in different countries, and he illustrated this point by reference to the small amount of formal undergraduate training in astronomy in British universities. He appealed for more text-books, at least in the English language, and hoped that a realistic syllabus could be drawn up for students in astronomy. In most countries, the number of students and the number of potential posts were not large, so that international arrangements for "summer schools", and for technical training for students in countries other than their own, were very important.

Professor Minnaert summarised the main points of his memorandum on the "Training of Young Astronomers in Foreign Countries". He emphasised that the teaching of undergraduate students should take place in the home country, if necessary with the help of expert teachers from other countries under UNESCO. He mentioned the possibility that UNESCO could administer a standard form of examination in basic subjects, as a guide. For graduate students, in the scientifically-less-developed countries, training abroad is probably desirable; but an essential prerequisite is a good knowledge of the language of the host country. He mentioned the possibility of special courses for foreign students and of a special diploma in cases where the full requirements for a higher degree had not been met. Some financial provision for such training abroad is already being made by UNESCO.

p.t.o.

For the technical training of astronomers, who already have the higher degree, it is almost essential that they should work in observatories and laboratories in which they can learn, by practice, the techniques of observation, the use of plate-measuring machines, of micro-photometers and similar apparatus, and can use an electronic computer. Commission 38 already does much useful work in financing exchanges at this level with the more experienced astronomers, but its activities could be extended if it had greater financial resources at its disposal. Professor Minnaert hoped that UNESCO could make a regular contribution to Commission 38 for this purpose, and might also assist with the arrangement of "summer schools".

Professor Schatzman made the point that, in the smaller countries, a fully-trained and well-qualified astronomer, returning from study abroad, might well find himself scientifically isolated; it might be better, in the first place, to send teachers abroad so that they could return and pass on their knowledge.

At this stage the President suggested that all persons present should summarise the arrangements for teaching astronomy, and for training astronomers, current in their own countries; they should also say to what extent there was provision for foreign students. The various statements (which are not reported in detail) served to indicate the wide diversities of practice--from compulsory background courses in astronomy for all science students in some countries, to the almost complete absence of any courses in others. The arrangements for foreign students seemed to be reasonably satisfactory, but the necessity for a really good knowledge of the language was repeatedly emphasised; some countries insist on a special language course.

The President then raised the question of what practical steps the Union could take to assist in the training of astronomers, both nationally and internationally. It was generally agreed that, although the Union has previously only been concerned with astronomy at the research level, questions of training could be brought within its scope. Dr. Goldberg emphasised that training could not be dissociated from research, and that it was very desirable for the top-level research astronomers to do some teaching.

As a first step, it was decided to explore the practicability of holding a larger meeting of those interested during the twelfth General Assembly in Hamburg in August 1964. The subjects to be discussed at this meeting would (provisionally) be:

- (a) to review the present methods of training and arrangements for exchange of students;
- (b) to consider how best the Union can assist in this matter, particularly in respect of the under-developed countries;
- (c) to recommend whether the Union should set up a Committee on the Training of Astronomers;
- (d) to recommend whether the Union should participate in the work of the Inter-Union Commission on Science Teaching.

Professor Minnaert undertook to arrange such a meeting, if enquiries from Members revealed adequate interest. The General Secretary agreed to assist, particularly

(The Training of Astronomers)

- 3 -

as regards the publication of a questionnaire in an Information Bulletin. He would obtain full information about the Inter-Union Commission on Science Teaching, and to what extent the Union could contribute to and benefit by its work.

In concluding the meeting, the President said that he thought the training of astronomers was a matter of considerable importance, and he intended to discuss it further with the Natural Sciences Department of UNESCO.

D. H. Sadler
General Secretary

IAU/67
July 1963