

REPORT OF THE EXECUTIVE COMMITTEE 1957-1960

NARRATIVE REPORT

Introduction

The Report of the Executive Committee must necessarily contain, for the purpose of permanent record, many formal matters and lists. Moreover, much of the content of greatest interest to Members has already been published in the *Information Bulletins*, which are circulated to Adhering Organizations, to institutions on the Distribution List, and to all Members. However, the Executive Committee does give a great deal of thought to the broad policies of the Union, both scientifically and administratively, and it is hoped that at least an indication of these can be communicated to Members in this report. As far as practicable details of formal and routine matters are relegated to appendices.

At the request of the International Council of Scientific Unions (the ICSU), the end of the financial year of the Union was changed in 1958 from 31 October to 31 December. This report therefore relates to the period of 38 months from 1 November 1957 to 31 December 1960. In many ways this period, terminating eight months before the General Assembly, is anomalous: it relates to rather less than one year's tenure of office by the former Executive Committee and a little more than two years by the present Committee; moreover it is governed by the decisions at two meetings of the General Assembly, particularly in respect of finance. There seems no entirely satisfactory way of avoiding this difficulty, which is of course common to Presidents of Commissions in the preparation of their reports. The best solution in regard to finance is for the General Assembly to approve, if necessary, a supplementary budget for the current year.

However, many of the decisions of the former Executive Committee either related to the tenth General Assembly or were reported in Volume X of the *Transactions*; and these are not necessarily repeated in this Report.

The reports of Commissions 3, 5, 6 and 38 follow immediately after this Report, on page 68.

Meetings of the Executive Committee

The former Executive Committee met during the tenth General Assembly in Moscow in August 1958, under the presidency of Professor A. Danjon; research reveals that this meeting could properly be numbered the 18th since the foundation of the Union in 1919. The 19th meeting, the first of the present Executive Committee, was held at the Royal Greenwich Observatory, Herstmonceux, England on 7 to 9 September 1959, under the presidency of Professor J. H. Oort, when all members were present with the exception of R. M. Petrie (Vice-President); both A. Danjon (former President) and P. Th. Oosterhoff (former General Secretary) were unable to attend in their advisory capacity. The present Executive Committee also met, for the 20th meeting, at the Academy of Sciences in Prague, Czechoslovakia on 6 to 9 July 1960; all members and both advisers were present.

Full reports of these meetings have been placed in the Union's archives, and the principal decisions made have been included in the *Information Bulletins*; accordingly no report of the proceedings at these meetings is given here.

Between meetings the Executive Committee directs the affairs of the Union by correspondence; fourteen Circular Letters have been sent to the present Executive Committee, since the Moscow meeting.

Membership

Since the last General Assembly (Moscow, 1958) Taiwan (The Republic of China) has adhered to the Union, and China (The People's Republic of China) has withdrawn from the Union. There are thus 38 countries at present adhering to the Union; a list of these countries, and of the adhering organizations, together with the approximate number of individual Members in each country, is given in Appendix 1.

Owing to delays in receiving notices of deaths and of changes of address, it is not possible to state the precise number of individual Members or to allocate them uniquely to particular countries. The figures in the following table are therefore approximate:

Number of Members in November 1957	901
Elected at the tenth General Assembly (Moscow)	+ 248
Co-opted (not nationals of adhering countries)	+ 2
Resigned	- 25
Notified, since November 1957, as deceased	- 45
	<hr/>
Number of Members as at 31 December 1960	1081
	<hr/>

A list of those Members whose deaths have been notified since November 1957 is given in Appendix II. Among so many distinguished astronomers, who have each in their way contributed greatly to Astronomy, it is invidious to select a few for special mention. But it is impossible not to pay separate tribute to the memory of those who have also contributed greatly to the administration of the Union:

to F. J. M. Stratton, General Secretary from 1925 to 1938, the only person who has attended every General Assembly of the Union, the great advocate of international co-operation and the trusted friend of astronomers everywhere;

to Harold Spencer Jones, President during the difficult years from 1944 to 1948, a veritable statesman of Astronomy, a wise counsellor and a steadfast friend of the Union.

Both believed passionately in international co-operation and held, with distinction, the most important post in the administration of international science, that of Secretary General of the International Council of Scientific Unions; the Union is grateful to them for many acts of kindness.

Commissions and their Membership

A full report of the decisions of the Executive Committee on this important aspect of the work of the Union is given in *Information Bulletin* No. 4 of August 1960. The proposals of the Executive Committee will be formally submitted to the General Assembly for approval, and the consequential changes will be introduced into the revised Statutes and By-laws.

One new Commission (No. 44 on 'Astronomical Observations from outside the Terrestrial Atmosphere') was formed, with Professor P. Swings as its first President; one new Sub-Commission (No. 29c on 'Stellar Classification') was also formed, with Dr W. P. Bidelman as President. Details of membership are given in the *Information Bulletins*, and in the list of Commissions in Part V of Volume X of the *Transactions*; reports from these Commissions will be included in the *Draft Reports*.

The Executive Committee also appointed Dr L. H. Aller as President of Commission 29 (Stellar Spectra) and Dr P. M. Millman as President of Sub-Commission 22b (Standardisation of Terminology and Notations concerning Meteors).

As announced in *Information Bulletin* No. 2, the Executive Committee set up a temporary working group of Sub-Commission 9b to consider the question of Site Testing. It is hoped

that the report of this working group will be generally available before the General Assembly. The future organization of the working group will be the subject of discussion in Berkeley.

In view of the rules regarding membership of the Union and the policy regarding membership of Commissions, in force at the General Assembly in 1958, the Executive Committee decided to restrict co-options to Commissions between General Assemblies to cases of oversight or error, to exceptional cases for which full information was not available to the Nominating Committee, and to astronomers in countries not adhering to the Union. In accordance with this policy, there have been few co-options; a full list is given in Appendix III.

Statutes and By-laws

In the course of the years, during which many amendments have been made to the original Statutes and By-laws, many minor inconsistencies and ambiguities have been introduced particularly in respect to the precise correspondence and meaning of the French and English texts. The Executive Committee agreed, at its meeting in September 1959, to a revision designed to remove such anomalies. Later it became evident that more substantial changes would be required to implement the proposed changes in the structure and membership of Commissions. A comprehensive revision of the Statutes and By-laws has therefore been undertaken and will formally be submitted, in accord with the provisions of the existing Statutes, to the General Assembly for adoption. The opportunity has been taken to clarify the constitutional position of the Executive Committee and to simplify the procedure for the co-option to membership of nationals of countries that do not adhere to the Union.

Organization of General Assemblies

The rapidly extending fields of interest of Astronomy, the increase of membership of the Union, and the much larger increase in the numbers of those wishing to participate in the meetings of the Union, will undoubtedly lead to increased organizational difficulties at the General Assemblies. The Executive Committee has given much consideration to the problems thus arising, without being able to propose any solution that is completely satisfactory; probably no such solution exists, which preserves the character of the earlier meetings of the General Assembly at which most Members knew personally most other Members. Certain changes have been introduced, notably the clear distinction being made between the Symposia and the General Assembly itself, which it is hoped will help to counteract the increased numbers and complexity of the meetings during the General Assembly.

One positive step (see *Information Bulletin* Nos 4 and 5) has been the decision to set up a Resolutions Committee to consider resolutions submitted by Commissions, with a view to recommending to the General Assembly which resolutions should be formally submitted for consideration. The Executive Committee requests the co-operation of Presidents of Commissions and others in restricting resolutions, formally submitted to the General Assembly, to those for which the full weight and authority of the Union will serve some useful purpose.

Symposia

During the period under review the following symposia were held:

No.	Subject	Place	Date
9	Radio Astronomy	Paris	August, 1958
10	The Hertzsprung-Russell Diagram	Moscow	August, 1958
11	The Rotation of the Earth and Atomic Time Standards	Moscow	August, 1958
12	Aerodynamical Phenomena in Stellar Atmospheres	Varenna	August, 1960
13	The Future of the International Latitude Service	Helsinki	July, 1960
14	The Moon	Leningrad	December, 1960

No. 9 was held shortly before, and Nos. 10 and 11 during, the tenth General Assembly. Through a variety of circumstances, no symposia were organized during 1959.

No. 9 was held in co-operation with the International Union for Scientific Radio (URSI); No. 12 was held in co-operation with the International Union of Theoretical and Applied Mechanics (IUTAM); No. 13 was held in co-operation with the International Association of Geodesy, during the General Assembly of the International Union of Geodesy and Geophysics (IUGG).

Full details of the arrangements for these symposia, with the names of the organizing committees, were given in the *Circulars* and the *Information Bulletins* which succeeded them. Particulars concerning the publication of the proceedings are given under the heading 'Publications'.

Representation and Representatives

The International Council of Scientific Unions (the ICSU). The President (J. H. Oort) and General Secretary (D. H. Sadler) represented the Union at the eighth General Assembly and tenth Meeting of the Executive Board of the ICSU in Washington, D.C., U.S.A. in October 1958, at the eleventh Meeting of the Executive Board in The Hague, The Netherlands in October 1959, and at the twelfth Meeting of the Executive Board in Lisbon, Portugal in October 1960.

The Union was represented: at the third Congress of the World Meteorological Organization at Geneva in April 1959 by P. B. Bouvier; at the International Symposium on Magneto-Fluid Dynamics in Washington, D.C. in January 1960 by L. Spitzer; at the Tercentenary Celebrations of the Royal Society of London in July 1960 by J. H. Oort; at the twelfth General Assembly of the International Union of Geodesy and Geophysics in Helsinki in July 1960 by A. Danjon; at the General Assembly of the International Union of Pure and Applied Physics in Ottawa, in September 1960 by G. Herzberg, and at the thirteenth General Assembly of the International Scientific Radio Union in London in September 1960 by J. H. Oort.

The Union was represented, jointly with URSI and COSPAR, at the Administrative Radio Conference of the International Telecommunication Union in Geneva from August to December 1959.

The Union is represented on:

- (a) Federation of Astronomical and Geophysical Services (FAGS):
by A. Danjon and M. Waldmeier. Meetings were held in May 1958, May 1959, and in May 1960.
- (b) Ad Hoc Committee on Contamination by Extra-Terrestrial Exploration (CETEX):
by J. Rösch. Meetings were held in May 1958 (The Hague) and in March 1959 (The Hague).
- (c) The International World Days Service (IWDS);
by J. F. Denisse. This service has taken over, as from 1 January 1958, the work on World Days from the Special Committee on the International Geophysical Year.

A single Advisory Committee for the Steering Committee of the International World Days Service and for the Central Committee on Ursigrams of U.R.S.I. has been set up. The Union has appointed the following astronomers to serve on this committee in respect of the scientific fields indicated:

Sunspots: M. WALDMEIER

Flares: M. A. ELLISON

Corona: W. O. ROBERTS

Other solar optical phenomena: E. R. MUSTEL

Solar radio phenomena on metre wave-lengths: A. D. FOKKER

Solar radio phenomena on short waves: A. E. COVINGTON

Localization of solar radio sources: P. SIMON

Spectra: J. P. WILD

Polarization: T. HATANAKA.

- (d) The Board of the International Foundation of the Pic-du-Midi;
by A. Danjon.
- (e) Comité Consultatif pour la Définition de la Seconde, du Bureau International des Poids et Mesures:
by W. Markowitz and N. Stoyko.
- (f) Comité Consultatif pour la Définition de la Mètre, du Bureau International des Poids et Mesures: by G. Herzberg.

Inter-Union Committees

The Union participates in the work of a number of Special Committees, Committees, or Inter-Union Committees, set up under the auspices of the ICSU, in co-operation with other international scientific unions. Where relevant to the Union, details of the constitution and membership of these committees have been given in the *Information Bulletins*. The following list is concerned only with the current representation from the Union.

- (a) Committee on Space Research (COSPAR), established by the ICSU:
by H. C. van de Hulst, who was elected President of the Committee at its first meeting. Meetings were held in London in November 1958, in the Hague in March 1959, in Nice in January 1960.
- (b) Comité International de Géophysique (CIG);
by M. G. J. Minnaert (as a member of the Bureau), and by M. A. Ellison (as representing the scientific discipline of 'Solar Activity').
This Committee is in continuation of the Special Committee for the International Geophysical Year, on which committee the Union was represented by A. Danjon and Y. Öhman.
- (c) Inter-Union Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF):
by J. F. Denisse (chairman), J. H. Oort, A. Unsöld and V. V. Vitkevitch.
- (d) Inter-Union Committee 'Triple Commission for Spectroscopy':
by G. Herzberg and Mrs Ch. Moore-Sitterly as members, and J. G. Phillips and J. Racah as corresponding members.
- (e) Inter-Union Committee on the Ionosphere:
the membership of this Committee has not yet been finally decided.
- (f) Inter-Union Commission on Solar and Terrestrial Relationships:
the IAU has nominated the following representatives: C. W. Allen, J. F. Denisse, R. Giovanelli and E. N. Parker.

Administrative Commissions

In order to separate the mainly administrative reports, to be published in Volume B of the *Transactions*, from the purely scientific reports, to be published in Volume A, the *Draft Reports* of Commissions 3, 5, 6 and 38 are appended to the Report of the Executive Com-

mittee. But the responsibility for these *Draft Reports* continues to be solely that of the Presidents of the respective Commissions.

PUBLICATIONS

As a recognition of the important part that publication takes in the affairs of the Union, a separate section of the Report is being devoted to this subject. A detailed list of publications issued during the period under review is given in Appendix IV.

General Policy

The general policy of the Executive Committee is to achieve rapid publication, with an acceptable but not unnecessarily high standard of presentation, in a form which provides wide dissemination among individual astronomers at a reasonable price. The prices of many commercial scientific publications are often so high as to inhibit purchase by individual research workers for their own use, even at the reduced prices often obtainable by Members of the Union.

For the principal publication, the *Transactions of the International Astronomical Union*, the Union must pay the full cost of production; the free distribution to all Members and to all institutions on the Distribution List, as laid down in the By-laws, reduces its potential sale to a point at which commercial publication is impracticable.

On the other hand the proceedings of some of the symposia, which are only distributed free to actual participants and to institutions on the Distribution List, are often of such general interest as to become commercial propositions to be published at no cost to the Union. This does not apply to all symposia, some of the smaller of which are unsuitable for publication in separate, expensively-bound volumes. It was with considerable reluctance that the Executive Committee discontinued, partly for this reason, the series of uniformly-bound symposium volumes (for example, nos. 1, 3 to 7) published for the Union by the Cambridge University Press; for these volumes the Union paid the full cost of production, and eventually received the net returns from sales. For the smaller, and usually more specialised, symposia the preferred policy is now to enter into an agreement with a suitable astronomical journal for publication of the proceedings in the journal; at the cost of some variation in format, style and presentation, there are gained rapid publication, and wide dissemination, at no or little extra cost to themselves, among those most particularly interested in the subject. Reprints from the journal provide separate numbered volumes in the series of IAU Symposium Volumes. The total cost to the Union may in some cases actually be higher than if published separately by a commercial publisher or by the Union itself; but the increased availability is ample justification for the increased cost. It is hoped that such arrangements may also be advantageous to the journals themselves.

For the larger symposia inclusion in current numbers of scientific journals is not possible, and for nos. 9 and 14 satisfactory offers for commercial publication, at no cost to the Union, have been accepted. However, the Union enters into an agreement to purchase some 350-400 copies for free distribution, and, in return, retains the right of consultation regarding the published price. In every case an agreement is also made by which Members may purchase copies at a reduced price.

Transactions and Draft Reports

Volume X of the *Transactions* was published in May 1960, several months later than scheduled because of the printing strike in Great Britain. It is the last volume to be printed and published by the Cambridge University Press under a contract dated in 1928; the Union owes much to the extremely high standard set by the Press in all aspects of printing, which has made the

Transactions one of the finest series of publications from all International Unions. A new printing contract has now been concluded with the firm of Willmer Brothers & Haram Ltd. of Birkenhead in England; it may confidently be expected that publication will be rather more rapid, without any significant diminution in standard. In this connection it must be emphasized that it is *impossible* to achieve the uniformity and consistency that might reasonably be expected in a publication by a single author, when some 60 Presidents of Commissions and Sub-Commissions present independent reports in widely different styles.

The increasing size of the volumes has led the Executive Committee to decide to issue Volume XI in two separate volumes, as follows:

- A. Reports on the State of Astronomy
- B. Proceedings of the General Assembly.

In broad outline, volume A will contain the scientific portions of the *Draft Reports*, while volume B will contain the purely administrative portions, including the Reports of the Executive Committee and of the administrative Commissions 3, 5, 6 and 38.

A separate agreement for the publication and sale of these volumes has been entered into with Academic Press (Inc.) London Ltd. Members will continue to receive both volumes free.

No satisfactory solution has yet been devised to avoid the expense of duplicate distribution to all members of the *Draft Reports* and the printed *Transactions*. It may be that in future it will be possible to print the Reports in final form, as volume A of the *Transactions*, for distribution before the General Assembly; but this would involve a rigid time-table for the receipt of typescripts, and for the reading of proofs, and inevitably many Reports would have to be omitted.

Symposia

A full list of the volumes already published is given in Appendix iv. The arrangements for publication of the proceedings of the symposia held in 1960 are as follows:

No.	Subject	Arrangements for publication
12	Aerodynamical Phenomena in Stellar Atmospheres	To be included in a supplement to <i>Il Nuovo Cimento</i>
13	The Future of the International Latitude Service	To be included in <i>Bulletin Géodésique</i>
14	The Moon	To be published commercially by Academic Press (Inc.) London Ltd.

As with Symposium Volume No. 11 (The Rotation of the Earth and Atomic Time Standards), the Union is glad to extend its approval of the proposal of the U.S.S.R. Academy of Sciences to publish a separate Russian-language edition of Symposium Volume No. 14.

Other publications

Apart from the *Transactions* and the Symposium Volumes, there are many publications which are subsidized wholly or partly by the Union, generally by resolution of the General Assembly. The Executive Committee has tried to standardize procedure for such publications, without in any way limiting the freedom (laid down in the By-laws) of Commissions to issue their publications independently. The Executive Committee is concerned to ensure three simple requirements:

- (a) that acknowledgment is made to the Union and, if applicable, to UNESCO for the subsidy towards the cost of publication;

(b) that there is adequate publicity for the publication, and that it is readily available for purchase;

(c) that, where agreed by the Executive Committee, copies are made available for distribution to the institutes on the Distribution List.

The Executive Committee has been concerned with the many publications, published by or for the Union, or sponsored by the Union, which are now almost unobtainable, because there is no named publisher and no readily available source from which they can be obtained. To remedy this a *Provisional List of IAU Publications* was prepared and circulated with *Information Bulletin No. 2*; it was hoped that this would result in the receipt of information, from those directly concerned with the publications, which would enable the list to be completed in respect of publications mentioned by name only or omitted entirely. The response has so far been disappointing; but it is not too late, and all Members are asked to communicate information that will add to the completeness of the list.

THE FINANCIAL SITUATION

Introduction

It is essential to consider a three-year period as a financial unit, since expenditure in any year varies according as to whether a General Assembly is held or not. Moreover, the Union has accounts in four currencies: U.S. dollars; British pounds; French francs (now New Francs); and Dutch guilders. Payments are made to and from each of these accounts according to convenience, and it is often difficult to ascertain from the individual accounts the total cost of any particular activity. The Executive Committee, acting on the advice of the Advisory Finance Committee, has accordingly decided to present to Members a single, much simplified statement, covering the whole three-year period in one single currency. The currency chosen is U.S. dollars, and amounts in other currencies have been converted to U.S. dollars at the following adopted conversion rates, treated as exact:

£1 sterling = \$2.80; \$1 = 3.80 Dutch guilders

Balance at 1 November 1957,	1 \$ = 350 French francs
1 November 1957—31 December 1958,	1 \$ = 420 French francs
1 January 1959—31 December 1960,	1 \$ = 4.90 French New Francs

The devaluation of the French franc has naturally resulted in a loss expressed in terms of U.S. dollars; moreover the simplification of using a constant conversion factor for the whole of 1958 has slightly falsified some entries in the accounts. The effect of the change of rates cannot be calculated precisely from the balances of the French accounts as different rates were used at different times; the net loss thus arising is accounted for in an equalisation account. The conversion of each receipt or payment at the conversion rate then applicable would neither be practicable nor realistic.

The relationship of the U.S. dollars to the gold franc, in which the unit of subscription to the Union is expressed, is:

1 gold franc = 0.29032 25 gramme of fine gold = 0.3266 U.S. dollar
 1 U.S. dollar = 3.06185 gold francs

However, for simplicity all amounts have been rounded off to the nearest dollar; *exact* agreement of the amounts with those in the individual accounts is thus not possible, apart from discrepancies introduced by variations in the rates of exchange. The twelve individual accounts have all been audited, and certified as correct, by the Union's professional accountants; these accounts, omitted from this Report for the first time, will be available for examination by the Finance Committee at the eleventh General Assembly in Berkeley in August 1961.

The Executive Committee, acting on the advice of the Advisory Finance Committee, and on the decisions of the tenth General Assembly, prepared, for its own guidance, a budget for the three years from 1 January 1959 to 31 December 1961, taking into account the heavy expenditure likely to be associated with a General Assembly on the west coast of America. The present three-year account is thus not a complete entity, and the financial result is not necessarily representative. Accordingly, no attempt has been made to do other than to present a practical statement of actual income and expenditure in the period 1 November 1957 to 31 December 1960. No account is taken of subscriptions due but not yet paid, nor of the balances of payments made after 31 December 1960 in respect of activities in 1960 or earlier years.

The fact that the period is slightly longer than three years has little effect on the accounts since the only substantial item directly dependent on the length of time is the salary of the Assistant Secretary.

The Union is very fortunate in having a reserve of about \$100 000, somewhat less than its total income for a three-year period; a great tribute is due to the wise counsel and economical administration in the past. This reserve provides the Union with a considerable measure of flexibility in the planning of meetings and symposia, for which precise estimates of cost cannot be made in advance. However, the existence of the reserve in no way diminishes the need for the efficient and economical use of the Union's income; in this connection it may be remarked that less than 15% of the Union's income is used for administration, including the cost of meetings of the Executive Committee.

Statement of balances

On 1 November 1957 the total of balances in the savings accounts and in the four bank accounts was 103 245·88 U.S. dollars, of which 39 993·47 U.S. dollars was in savings accounts. On 31 December 1960, the corresponding figures were 112 349·97 and 55 378·65, increases of 9104·09 and 15 385·18 respectively. During this period a further sum of \$10 500 was transferred to the savings accounts; the remainder of the increased balance represents interest. In these figures no account is taken of the small balances (of cash and stamps) in the Administrative Office, or in the hands of those to whom annual grants are made.

Statement of Income and Expenditure, 1957-60

The statement on pages 58 and 59 presents a much simplified picture of the income and expenditure of the Union from 1 November 1957 to 31 December 1960. For clarity, all entries are expressed in U.S. dollars under only a few main headings, generally for all three years combined. For the reasons explained above, this statement does not constitute an *exact* account; the twelve separate accounts, from which this statement is prepared, have been audited professionally and certified as correct.

The following explanatory notes provide more detailed information in relation to each item of the accounts, where this is applicable.

A. Income

1. *Balance.* The balance on 1 November 1957 is stated on page 44 of Volume X of the *Transactions*, in the report of the Executive Committee presented to the tenth General Assembly of the Union.

2. *Subscriptions.* The unit of subscription is fixed by the General Assembly and was 500 gold francs, equivalent to 163·30 U.S. dollars, during each of the three years 1958, 1959 and 1960. Account is taken only of the actual payments received; in some cases there is a small difference

REPORT OF EXECUTIVE COMMITTEE

STATEMENT OF INCOME AND EXPENDITURE, 1957-1960

					<i>Income, 1957-1960</i>			
							U.S. dollars	U.S. dollars
1.	Balance, 1 November 1957	..	..	..	..	..		103 246
	(a) in four bank accounts	..	..	..	..	..	63 252.41	
	(b) in savings accounts:	..	..	..	..	..	39 993.47	
2.	Subscriptions from 38 adhering countries	..	..	..	..	..		62 322
	<i>No. of units</i>							
	<i>Year</i>	<i>due</i>	<i>received</i>	equivalent, after conversion, to the				
	1957	—		following actual receipts				
	1958	122	142			23 255		
	1959	122	138			22 566		
	1960	115	101			16 501		
3.	Sales of Publications	..	..	..	..	..		10 102
	(a) Transactions and Symposia (including reprints)	..	..	..	..	..	8 017	
	(b) Astronomical News Letters	..	..	..	..	..	2 085	
4.	Interest on Savings Accounts:	..	..	..	..	..	4 885.18	4 885
5.	Subventions from UNESCO, through ICSU							43 000
	grants allocated for:							
	<i>year</i>	<i>meetings</i>	<i>symposia</i>	<i>publications</i>	<i>Com. 38</i>			
	1958	5 500	5 000	6 000		16 500		
	1959		4 000	8 500		12 500		
	1960		3 000	8 000	3 000	14 000		
								223 555

Note added October 1961

As requested by the Finance Committee (see page 37) details are given of two self-balancing items of income and expenditure that were omitted from the statements above:

(a)	Subvention from the ICSU for the expenses of the meetings in Moscow of the two Joint Commissions (of ICSU)							
	(i) Joint Commission on Spectroscopy	..	..	..	..	..		\$2 467
	(ii) Joint Commission on Solar and Terrestrial Relationships	..	..	..	..	..
(b)	Contribution from URSI towards the travel expenses and publication costs for IAU Symposium No. 9 (URSI Symposium No. 1)	..	..	..	..	..		\$2 000

STATEMENT OF INCOME AND EXPENDITURE, 1957-1960

		<i>Expenditure, 1957-1960</i>	
		U.S. dollars	U.S. dollars
1.	Administrative Office (Bureau de l'Union)		11 638
2.	Projects approved by the General Assembly (details are given in the notes)		40 639
3.	General Assembly, Moscow, August 1958		10 181
	(a) travel grants for Executive Committee and Presidents of Commissions	4 246	
	(b) travel grants for Young Astronomers	5 025	
	(c) incidental expenses	910	
4.	<i>Draft Reports and Transactions</i> of the IAU		16 631
	(a) <i>Draft Reports</i> 1958, and <i>Trans. IAU</i> 10	14 376	
	(b) balance for <i>Trans. IAU</i> 9	2 255	
5.	Meetings of Executive Committee		4 216
	(a) Herstmonceux, September 1959	1 391	
	(b) Prague, July 1960	2 825	
6.	Symposia—travel and organizational expenses		6 130
	No. 9 Radio Astronomy, Paris, August 1958	1 412	
	No. 10 H. R. Diagram, Moscow, August 1958	1 410	
	No. 11 Rotation of the Earth, Moscow, August 1958	530	
	No. 12 Stellar Atmospheres, Varenna, August 1960	1 470	
	No. 13 Variation of Latitude, Helsinki, July 1960	100	
	No. 14 The Moon, Leningrad, December 1960	1 208	
7.	Publication of Proceedings of Symposia		17 209
	No. 4 reprints	689	
	No. 5 72 pages, bound, full cost paid by IAU	1 546	
	No. 6 545 pages, bound, full cost paid by IAU	8 919	
	No. 7 93 pages, bound, full cost paid by IAU	1 125	
	No. 8 204 pages, bound, reprinted from <i>Rev. Mod. Phys.</i>	—	
	No. 9 612 pages, bound, published by Stanford Univ. Press	3 060	
	No. 10 129 pages, bound, reprinted from <i>Ann. Astrophys.</i>	1 020	
	No. 11 43 pages, unbound, reprinted from <i>A.J.</i>	850	
8.	Subscriptions to the ICSU		1 273
9.	Representation		824
10.	Expenditure, authorized by the Executive Committee (details are given in the notes)		1 455
11.	Equalisation account		1 009
12.	Balance, 31 December 1960		112 350
	(a) in four bank accounts	56 971·32	
	(b) in savings accounts	55 378·65	
			223 555
<i>Note added October 1961</i>			
(a)	Payments made for travel expenses for the meetings in Moscow of the two Joint Commissions (of ICSU) on Spectroscopy and on Solar and Terrestrial Relationships		\$2 467
(b)	Payments (excluded from items 6 and 7 above) made on behalf of URSI in connection with IAU Symposium No. 9 (URSI Symposium No. 1):		\$2 000

in exchange rates. On 31 December 1960, six countries were in arrear with their subscriptions to the extent of a total of 13 units of subscription.

3. *Sales of Publications.* Owing to the complexity of the accounts from the printers and publishers, the professional accountants have not always made a clear distinction between charges for: (a) printing, binding and paper; (b) distribution; (c) provision of reprints, for which the Union receives repayment; (d) sales. It has been judged to be impracticable, and unnecessary, to recapture the precise figures under these headings; accordingly, both the income from sales and the expenditure on publications are increased by the same small (unknown) sum in respect of reprints.

The sales of publications show an appreciable increase over the previous period of three years, due mainly to the sale of the Symposium volumes. The future trend of this item of income will depend on the policy adopted for the publication and sale of the Transactions and the Symposium volumes.

4. *Interest.* The interest on the money in the savings accounts has been allowed to accumulate and has been added to the balances of those accounts.

5. *Subvention from UNESCO.* This is administered through the International Council of Scientific Unions, which exercises financial control; full accounts (not given here) of the expenditure of the subvention are returned each year to the ICSU and to UNESCO. Although the subvention is made up of grants allocated for specific purposes, it is possible, without formality, to transfer such grants from one purpose to another, provided it is within the permitted UNESCO category. In 1960, for the first time, a specified grant was allocated to Commission 38 for the exchange of astronomers; and this has been continued for 1961.

Expenditure

1. *Administrative Office.* Prior to the tenth General Assembly the 'Bureau de l'Union' accounted financially for the expenditure, not only of the amounts voted for administration by the General Assembly but also for those approved by the Executive Committee for expenditure from the UNESCO subvention. At the tenth General Assembly, the annual sum allocated to the Administrative Office was reduced to the actual sum required for administration. All specific items of expenditure, such as for the publication of the proceedings of symposia, have been accounted for under the appropriate headings, even though for the year 1958 the money was allocated to the Bureau.

The expenses of the Administrative Office include the printing and distribution of the Information Bulletins, travelling expenses of the General and Assistant Secretaries (except for meetings of the Executive Committee), and miscellaneous small payments for services for some Commissions, as well as salaries, social security and pension payments, and all normal office expenses.

For part of the period, the Office was in Leiden but was moved to Herstmonceux in January, 1959. The Union is grateful to the authorities of the University Observatory, Leiden, and of the Royal Greenwich Observatory, Herstmonceux, for free accommodation and many facilities.

2. *Projects approved by the General Assembly.* The expenditure of the Union's proper income, excluding the UNESCO subvention, is governed by the decisions of the General Assembly, as advised by the Finance Committee. Full details of the allocations approved by the General Assembly are given in the resolutions printed in the *Transactions (Trans. IAU 9, 66, 1957 for the year 1958 and 10, 71, 1960 for the years 1959 and 1960).*

The details of the actual expenditure on these projects follow; some allocations have not

yet been taken up, a few have been increased by the Executive Committee (for example the allocation to the Telegram Bureau), and some projects have lapsed.

Payments made, in U.S. dollars, 1 November 1957 to 31 December 1960

	U.S. dollars
Commission 5 (<i>Astronomical News Letters</i>)	5 460
Commission 5 (<i>Bibliographie mensuelle</i>)	163
Commission 6 (Telegram Bureau)	1 588
Commission 10 (<i>Cartes héliographiques de la Photosphère</i>)	981
Commission 10 (<i>Cartes synoptiques de la Chromosphère solaire</i>)	2 646
Commission 20 (Minor Planet Center, at Cincinnati)	750
Commission 23 (<i>Carte du Ciel</i>)	8 247
Commission 24 (<i>Catalogue of proper motions</i>)	1 000
Commission 26 (<i>Catalogue of double stars, f</i>)	2 000
Commission 27 (English version of remarks to the second edition of GCVS)	615
Commission 29 (<i>Vatican Atlas of Molecular Spectra</i>)	382
Commission 38 (Exchange of astronomers)	16 157
Commission 42 (Eclipsing binary Centre, Cracow)	650

The following subventions, approved by the General Assembly, are still outstanding, and must be regarded as commitments for future years. If not paid by the next General Assembly it would be desirable to include them in the budget for the following period.

	U.S. dollars
Commission 12 (Solar spectrum tables)	3 960
Commission 20 (Comet catalogue)	1 400

The annual grant of \$750 for 1960 has not yet been paid to the Minor Planet Centre at Cincinnati; no grant was paid for 1957–8 as it was not needed, so that only one payment has been made in the three years. Further, there are balances in favour of the *Carte du Ciel* of about \$8850 and of Commission 38 of about \$1525; in both cases, all payments are made by the Administrative Office on instructions from the Presidents of the respective Commissions.

3. *General Assembly.* The three main items of expenditure in connection with a General Assembly are those listed separately. Generally the Executive Committee, advised as necessary by the Advisory Finance Committee, agrees beforehand on fixed total sums for the first two items; and those are apportioned among those requiring travel grants in the best way possible. Allocations have usually to be fixed at considerably less than the actual fares. In the past the sum allocated for travel grants for young Astronomers has been supplemented by a grant from the funds at the disposal of Commission 38; this was also done in 1958, and the figure under heading 2 for Commission 38 includes 1000 dollars for this purpose.

Through the generosity of the host countries, the incidental expenses, associated with the organization of the meetings, are usually small and bear little relation to the total cost of the organization. The items under (c) mainly consist of the travelling expenses of the General Secretary to Moscow in April 1958, and of the Assistant General Secretary and Assistant Secretary to the General Assembly.

4. *Draft Reports and the Transactions.* The printing and distribution of the *Draft Reports* and the *Transactions* of the IAU forms the largest single item of expenditure. The cost is enhanced by the practice of circulating half the complete volume, containing the *Draft Reports*, twice to all Members; and there is no simple answer to this problem. In the three years covered by the accounts, most of the cost of Volume X has been paid for, including both the *Draft Reports*

and the final volume; but the account for the distribution of Volume X has not been presented, while the similar account for Volume IX (together with some other items including reprints) has been paid. As explained under 'Sales of publications' the total cost has been slightly enhanced by the inclusion of the cost of some reprints, for which payment has been, or will be, recovered.

5. *Meetings of the Executive Committee.* The amounts given include all incidental expenses as well as the cost of travel and subsistence; that they are so small is a measure of the success attained by members of the Executive Committee in combining the meetings with other business. Much also is owed to the generosity of the host countries and of the organizations at whose invitations the meetings were held. The expenses of the meeting in Moscow, in August 1958, are included in those of the General Assembly.

6. *Symposia.* The main cost of the symposia lies in the contribution made by the Union towards the travelling expenses of the participants; this is supplemented sometimes by a grant towards organizational and secretarial expenses, but, as with other activities, considerable expense is always borne by the host organization. In the case of a joint symposium with another Union, the expenses are shared between the Unions. Generally, a grant of a fixed sum is made to the organizing committee by the Executive Committee on the advice of the Advisory Finance Committee; it is not always possible to allocate the whole sum, as individual grants are often returned when it is too late for them to be re-allocated. A greater measure of flexibility will be allowed in future.

Some payments in respect of Symposium No. 14 are still to be made in 1961.

No symposia were organized in the calendar year 1959, and two in 1958 were held during the General Assembly; this is unusual and supplies another factor in the rather unrepresentative picture provided by the statement of income and expenditure.

7. *Publication of the proceedings of symposia.* Reference is made elsewhere in this report to the change in policy regarding the publication of the proceedings of symposia; separate arrangements are now made for each symposium, depending on the public appeal of the subject, the length of the proceedings, and its suitability for publication in a particular scientific journal. The details of each arrangement vary, and it is not practicable to give them in full. Generally, the Union will continue to receive the proceeds of the sale of Symposium Volumes 1, 3 to 7, published for the Union by the Cambridge University Press; it may receive royalties on future sales of Volume 9, for which the payment represents the cost of purchasing and distributing copies to participants in the symposium and institutions on the Distribution List; it will receive no income from Volumes Nos. 8, 10, and 11, for which special arrangements were made with the scientific journals in which they were published. Where applicable, *i.e.* for Volumes 6 and 9, editorial costs are included in the cost of publications.

No payments are outstanding on any of the symposia listed. Some small residual payments in respect of reprints from Symposium No 4 are, however, included. The cost of the publication of the proceedings of symposia Nos. 12, 13 and 14 will enter in 1961, and that for Nos. 15, 16 and 17 will probably enter in 1962.

8. *Subscription to the ICSU.* The Union makes a contribution towards the administrative expenses of the ICSU to the extent of 2% of the income from subscriptions for the previous year; the figure therefore relates to the income for the years 1957, 1958 and 1959.

9. *Representation.* The general policy in respect of formal representation of the Union at General Assemblies of other Unions, and similar meetings, is for the Executive Committee to appoint representatives who will be attending in other capacities, and so may represent the Union without expense to the Union. However, it is sometimes necessary to reimburse the

travelling and other expenses of representatives to technical meetings, as well as of representatives on Inter-Union Committees. In 1960 the Union shared, with URSI and COSPAR, the expense of maintaining a representative at the Ordinary Administrative Radio Conference of the International Telecommunication Union in Geneva, the Union's share of the expenses was 824 U.S. dollars. Similar expenses in future years will be borne by the Inter-Union Committee on Frequency Allocations for Radio Astronomy and Space Science, to the expenses of which the Union will contribute.

There were no other payments under this heading, but it will nevertheless be desirable to provide a small sum in future budgets for this purpose.

10. *Expenditure authorised by the Executive Committee.* At the General Assembly in 1958 no allocation was made, nor could it properly be made, in respect of the UNESCO subvention; but an Advisory Finance Committee (*Trans. IAU* 10, 27, 1960) was appointed to advise the General Secretary and the Executive Committee on how best to use these funds. This expenditure, not governed by the decisions of the General Assembly, is made under headings 3-10. Headings 3-9 represent definite items of expenditure foreseen by the Finance Committee but not specifically provided for in the budget, which was based only on the Union's proper income. Some of the items, such as those under headings 5, 8 and 9, do not wholly come within the categories to which the UNESCO subvention can be allocated, but, on the other hand, the UNESCO subvention can be, and is, properly used in respect of many of the publications under heading 2. The division of the UNESCO subvention between the headings, and between individual items under each heading, is quite arbitrary.

However, between General Assemblies there arise demands from Commissions, similar to those under heading 2, which it would be undesirable to defer to the next General Assembly; the Executive Committee, with the advice of the Advisory Finance Committee, should have discretion to make appropriate grants in the same way as it does with the much larger amounts for symposia and publications. Some small amounts have actually been included in the expenditure of the Administrative Office, but the following items were specifically approved by the Executive Committee:

	U.S. dollars
Commission 19 (grant to Dr P. Melchior in respect of the declination of stars for the International Latitude Service)	400
Commission 23 (reprinting Part II, vol. 2 of the Catania section of the <i>Astrographic Catalogue</i>)	300
Commission 27 (translation and printing of the introduction to supplements of the GCVS)	400
Sub-Commission 29a (informal colloquium, Meudon, September, 1960)	255
Annual contribution to the Fondation Internationale du Pic-du-Midi	100

Moreover, promises have been made in respect of the following, although no payments have yet been made:

	U.S. dollars
Commission 5 (grant-in-aid of the publication of the <i>Bibliography of Astronomy</i> 1881-98)	5 000
Commission 33 (Publication of tables for the conversion of equatorial to galactic co-ordinates)	2 000
Sub-Commission 33b (Reprints of report)	200

11. *Equalisation account.* The statement of income and expenditure, abstracted from accounts in four different currencies, can only be made to give an exact balance by excessively complicated adjustments; this is particularly so when the rates of exchange have been varying. The

sum under this heading is the total of the adjustments necessary; its main constituent is the small loss due to the devaluation of the French franc. The balance of the French account on 1 November 1957 was unusually large, namely 1 937 540 (old) francs; the immediate loss on revaluation was thus 923 U.S. dollars.

Preparation of a budget

It is the duty of the Executive Committee, imposed by the Statutes of the Union, to prepare a budget for the approval of the General Assembly, on the recommendation of the Finance Committee. A budget, such as has been drawn up in the past, which ignores one of the Union's principal sources of income and the major sources of its expenditure, cannot be realistic; the Finance Committee at the next General Assembly will accordingly be asked to approve a comprehensive budget for the following three-year period, including all items of income and expenditure. This is only possible because of the flexibility provided by the Union's reserve, and by the freedom to vary the expenditure under several headings (particularly for symposia) according to the amount of the UNESCO subvention. It is essential that this budget should contain provision for expenditure on projects arising between General Assemblies, subject to the approval of the Executive Committee as advised by the Advisory Finance Committee.

APPENDIX I. LIST OF COUNTRIES ADHERING TO THE UNION

In the following list are given the 38 countries that adhere to the Union in December 1960, together with the year of adherence, the approximate number of Members, and the adhering organizations.

Country	Year	No.	Adhering Organization
Argentina	1927	8	Comité Nacional de Astronomia, La Plata.
Australia	1939	25	Australian Academy of Science, Canberra.
Austria	1955	10	Österreichische Akademie der Wissenschaften, Wien.
Belgium	1920	34	Académie Royal de Belgique, Bruxelles.
Bulgaria	1957	1	Bulgarische Akademie der Wissenschaften, Sofia.
Canada	1920	28	Department of Mines and Technical Surveys, Ottawa.
Chile	1947	3	Observatorio Astronomico Nacional, Universidad de Chile, Santiago de Chile.
Czechoslovakia ..	1922	23	Academy of Sciences, Prague.
Denmark	1922	10	Det Kongelige Danske Videnskabernes Selskab, København.
Eire	1947	2	Dublin Institute for Advanced Studies.
Finland	1948	8	Académie des Sciences et Lettres, Helsinki.
France	1920	97	Académie des Sciences, Paris.
Germany	1951	86	Astronomische Gesellschaft, Hamburg-Bergedorf Sternwarte.
Great Britain ..	1920	106	Royal Society, London.
Greece	1920	9	Academy of Athens, Athens.
Hungary	1947	2	Hungarian Academy of Sciences, Budapest.
India	1946	12	Government of India, Ministry of Scientific Research and Cultural Affairs, New Delhi.
Israel	1954	1	Research Council of Israel, Jerusalem.
Italy	1921	31	Consiglio Nazionale delle Ricerche, Roma.
Japan	1920	18	Science Council of Japan, Tokyo.
Lebanese Republic	1954	2	National Lebanese Committee for Astronomy, Ksara.
Mexico	1921	8	Universidad Nacional, Mexico, D.F.
Netherlands ..	1922	30	Koninklijke Nederlandse Akademie van Wetenschappen, Amsterdam.
Norway	1922	10	Det Norske Videnskaps-Akademi, Oslo.
Poland	1922	24	Polska Akademia Nauk, Warszawa.
Portugal	1924	4	Government, Lisbon.
Roumania	1928	7	Comitetul National Astronomic, Bucarest.
South Africa ..	1938	8	South African Council for Scientific and Industrial Research, Pretoria.
Spain	1922	12	Academia de Ciencias Exactas, Madrid.
Sweden	1925	24	Kungl. Vetenskapsakademien, Stockholm.
Switzerland ..	1923	11	Schweizerische Naturforschende Gesellschaft, Zürich.
Taiwan (The Republic of China)	1959	—	Astronomical Society of the Republic of China, Taipei.
United Arab Republic (Egypt)	1925	8	Astronomical Center at Helwan, Egyptian Region.
United States ..	1920	276	National Research Council, Washington.
U.S.S.R.	1935	129	Academy of Sciences of the U.S.S.R., Moscow.
Vatican City State	1932	3	Pontificia Accademia delle Scienze i Nuovi Lincei, Rome.
Venezuela	1953	—	Academia de Ciencias Fisicas Matematicas y Naturales, Caracas.
Yugoslavia	1935	9	Conseil Fédéral de la Recherche Scientifique, Belgrade.

APPENDIX II. LIST OF DECEASED MEMBERS

The Executive Committee regrets to record the loss by death of the following 45 Members of the Union:

A. Ali	7 February 1960	M. Milankovitch	12 December 1958
J. A. Anderson	2 December 1959	S. A. Mitchell	22 February 1960
G. Armellini	16 July 1958	S. V. Orlov	11 January 1958
W. Baade	25 June 1960	A. Pannekoek	28 April 1960
J. Baillaud	28 November 1960	P. P. Parenago	5 January 1960
J. Bobone	21 October 1958	A. Patry	20 June 1960
W. Brunner	1 December 1958	I. Polit	19 October 1958
Miss E. J. Bugoslavskaja	30 May 1960	W. Rabe	1 April 1958
K. Burns	30 April 1958	F. E. Ross	21 September 1960
B. H. Dawson	18 June 1960	R. F. Sanford	7 April 1958
A. Dittrich	15 December 1959	O. Seydl	15 February 1959
A. D. Dubyago	29 October 1959	C. K. Seyfert	13 June 1960
C. S. Gum	29 April 1960	A. V. Soloviev	23 August 1959
J. Jackson	9 December 1958	F. J. M. Stratton	2 September 1960
F. A. Jenkins	Summer 1960	G. A. Tikhov	25 January 1960
Sir Harold Spencer Jones	3 November 1960	P. J. van Rhijn	9 May 1960
A. Kopff	25 April 1960	R. Vernic	20 October 1958
P. Lejay	11 October 1958	Miss J. M. Vinter Hansen	27 July 1960
F. C. Leonard	Autumn 1960	H. von Zeipel	8 June 1959
K. Lundmark	23 April 1958	V. P. Vyaznitsyn	14 October 1960
A. McKellar	6 May 1960	H. P. Wilkins	23 January 1960
C. E. Kenneth Mees		R. E. Wilson	
		W. H. Wright	16 May 1959

APPENDIX III. CO-OPTIONS TO COMMISSIONS

Subsequent to the tenth General Assembly in 1958 (Moscow) the following were co-opted by the various Commissions under the provisions of By-law IV, 15:

F. M. Bateson (27), L. I. Gama (31), L. Goldberg (44), L. G. Henyey (35), F. Hoyle (35), H. L. Johnson (37), E. F. McClain (40), L. Mestel (35), Miss E. Roemer (20a), S. Rosseland (35), E. E. Salpeter (35), E. Schatzman (35), H. Schneller (42), H. Zirin (10).

APPENDIX IV. LIST OF PUBLICATIONS

<i>Transactions of the IAU</i> , Volume X,	Published by the Cambridge University Press.
IAU Symposia Volumes	
No. 5 <i>Comparison of the Large-Scale Structure of the Galactic System with that of other Stellar Systems</i>	Editor: N. G. Roman Published by the Cambridge University Press.
No. 6 <i>Electromagnetic Phenomena in Cosmical Physics</i>	Editor: B. Lehnert Published by the Cambridge University Press.
No. 7 <i>Second Conference on Co-ordination of Galactic Research</i>	Editors: A. Blaauw G. Larsson-Leander N. G. Roman A. Sandage A. D. Thackeray H. F. Weaver Published by the Cambridge University Press.

LIST OF PUBLICATIONS (*continued*)

- No. 8 *Proceedings of the Third Symposium on Cosmical Gas Dynamics* Editors: J. M. Burgers
R. N. Thomas
Published in *Reviews of Modern Physics*.
- No. 9 *Paris Symposium on Radio Astronomy* Editor: R. N. Bracewell
Published by the Stanford University Press.
- No. 10 *The Hertzsprung-Russell Diagram* Editor: J. L. Greenstein
Reprinted from *Annales d'Astrophysique*.
- No. 11 *The Rotation of the Earth and Atomic Time Standards* Editor: D. Brouwer
Reprinted from the *Astronomical Journal*.
- Commission 5:
Astronomical News Letters Nos. 88-101
Editor: V. Kourganoff.
Published and distributed by Laboratoire d'Astronomie de Lille.
- Les Observatoires Astronomiques et Les Astronomes* (second edition) Prepared by F. Rigaux
Issued and distributed by l'Observatoire Royal de Belgique.
- Commission 6:
IAU Circulars Issued by the 'Bureau Central des Télégrammes Astronomiques'.
- Commission 10:
Heliographic Charts of the Photosphere
Volume XI, nos. 2, 3 and 4
Published by the Eidgen. Sternwarte in Zürich, under the direction of M. Waldmeier.
- Commission 10 (formerly 11):
Cartes Synoptiques de la Chromosphère Solaire
Volume II, fascicule 2 and 3
Prepared by the Section d'Astrophysique de l'Observatoire de Paris at Meudon, under the direction of L. d'Azambuja.
- Commission 20:
Minor Planet Circulars Mimeographed Circulars issued by the Minor Planet Center in Cincinnati.
- Commission 23:
Astrographic Catalogues
Melbourne Section
Volume VI, Zones -75° , -76° , and -77°
Volume VII, Zones -78° , -79° , -80° and -81°
Prepared by J. Baillaud.
- Commission 26:
Circulaires d'Information Prepared by P. Muller.
- Commission 27:
English version of Introduction and Remarks from the seventh and eighth Supplements to the General Catalogue of Variable Stars. Prepared by P. Th. Oosterhoff.
English Version of the Remarks to the second Edition of 'The General Catalogue of Variable Stars'. Prepared by the President of Commission 27.
- Circulars*, 1958, Nos. 1 - 4; and
Information Bulletins Nos. 1 - 4
Prepared by the General Secretary of the IAU.