

CHAPTER III
TWENTIETH GENERAL ASSEMBLY

FIRST SESSION

Held in the Baltimore Convention Center

2nd August 1988, 16.00

Prof. J. Sahade, President in the Chair

1. Formal Opening by the President

"Mesdames, Messieurs,

Je voudrais commencer cette première séance de la Vingtième Assemblée Générale de l'Union Astronomique Internationale en vous souhaitant d'une part la bienvenue et, d'autre part, un séjour non seulement très agréable mais surtout très profitable au point de vue scientifique.

A Delhi, j'ai partagé avec vous les réflexions que j'avais à l'esprit au moment d'être élu Président de l'Union. Mon adresse de cette après-midi sera en quelque sorte une continuation de l'allocution de Delhi avec, en plus, l'expérience de presque trois années.

Comme à Delhi, je n'essaierai pas d'utiliser alternativement des paragraphes en anglais et en français tout au long de mon allocution, parce que, vraiment, je trouve que c'est impossible pour moi de faire cela d'une manière à la fois équitable et efficace ; d'autre part, il me semble qu'il serait même gênant de vous lire quelques parties de l'adresse deux fois, une fois en anglais et l'autre fois en français. Alors, aujourd'hui encore, je m'adresserai à vous en utilisant seulement la langue du pays où nous sommes réunis.

We start this General Assembly after having held an Extraordinary General Assembly that consisted in changes in the Statutes that incorporate a new position in the Executive Committee, that of President-Elect, and a new category of membership, that of Associate National Member.

I am convinced that both additions will contribute to the improvement of our Union and to the development of Astronomy in countries that have as yet a very low level of activity in the realm of our science.

At this first session of the General Assembly we are supposed, I believe, to report on what has happened in the Union during the time elapsed since Delhi, if anything has happened at all, and set the stage for the forthcoming term in our traditional sequence. The curve of growth of individual membership in our Union has a definite trend since about the time of our insertion in the space age. When I first noticed the tendency I became worried and also became convinced that it was time to start thinking as to whether we should continue holding General Assemblies in the way we have been doing it so far, at the risk of the meetings becoming unmanageable in size. But there has been no increase, perhaps a decrease, in attendance since Brighton (1970) and Grenoble (1976). So, for the time being, there seems to be no reason to worry in regard to the size of the General Assemblies. But, we should, however, ask ourselves: why is it that while the number of individual Members is steadily increasing in the Union, the General Assembly attendance is not going the same way?

The reasons may be several. Of course, there may be, at each time, particular circumstances that we would have to consider for a thorough evaluation. In addition, there is, on one side, a proliferation of scientific meetings and, on the other, a shortage of the funds generally available for research. Moreover, a good portion of the community of nations is facing serious economic problems, and for their scientists the level reached by travel expenses, subsistence expenses and registration fees in terms of their own salaries, makes attendance at meetings somewhat prohibitive, much more drastically so than it is now for almost every scientist. It might be a good exercise to look more deeply into the problem and see what can be done about it. A few days ago, I brought the question of the registration fees to the attention of the Third World Academy of Sciences in the hope that the Academy together with ICSU could consider it and try to find at least a partial solution.

The shortage of research funds has either led to the actual closing down or to threats of shutting off or of curtailing the activities of important, long established observatories. Fortunately, in most cases, good sense has prevailed. This suggests that it might perhaps be necessary to remind decision-makers, from time to time, in an appropriate way, of the importance of Astronomy, the oldest of scientific human endeavours, a pure, basic science, with a strong social component, that generates progress in other branches of science and technology and even gives rise to products of massive consumption, like pyrex ware or quartz watches, to give only two examples.

In Delhi I expressed my concern in regard to the gap that is increasing between the groups that have readily access to large telescopes, to VLBI installations, to space instrumentation... and those that cannot aim at having similar possibilities within their reach and feel that they are being left hopelessly behind. In order to try to contribute to the improvement of such a situation and to create a better general feeling among concerned astronomers, we have established a Working Group of the Executive Committee for the Promotion and Development of Astronomy. In addition, the General Secretary has been contacting UNESCO for the signing of a possible cooperative contract which would be coherent with the objectives of the Working Group.

One of the tasks that is assigned to the Group relates to the fundraising exercises that were strongly suggested by the Finance Committee of the Delhi General Assembly. We are starting cautiously as is advisable and I hope that in a short time the Working Group would have acquired important dimensions and will be leading the IAU into activities that would help bridge, at least partly, an undesirable gap and will be bringing to the forefront of modern research, sometimes perhaps in the framework of some kind of consortia arrangements, intelligent people who may otherwise have little chance to find satisfaction for their aspirations. I feel confident that this move we have made will work towards a healthier development of Astronomy and towards a strengthening of our Union. On the other hand, we would just be fulfilling one of the objectives of the Union, as read in the Statutes.

During the interval between Delhi and Baltimore -and here, I ought to place a complaint because such interval is much less than three years, quite a discrimination, I would think!- there have been quite a number of highlights in astronomical research, of the calibre, for instance, the outstandingly successful multiple space experiments with Halley's Comet. We were also rewarded with the appearance of the first naked-eye supernova since Kepler's and with the discovery of its progenitor star.

The expectations for the present General Assembly were to learn of the first results coming from the Hubble Space Telescope. Unfortunately, the saddest tragedy of the Challenger, to whose crew we pay once again our sorrowful homage, delayed the launch, now scheduled for some time next year.

Also next year, ESA's Hipparcos is due to be in orbit and other astronomical satellites that will certainly yield important results are scheduled later in time.

Of course, we are eagerly waiting for the information that shortly will be coming from the Phobos missions of the Soviet Union.

So, the promise is for more exciting times for us, astronomers. I think that we are fortunate people, we enjoy what we do and we live excitement after excitement!

I am happy to extend once more a warm welcome to all of you, Members of the Union, invited participants and guests. I particularly welcome those Members that have belonged to the Union for fifty years or more, and are present at this General Assembly, namely,

Prof. W.J. Luyten
Prof. K.A. Strand

I would now propose that we send a telegram to past Presidents and past General Secretaries of the Union who are unable to be with us at this gathering,

Prof. J.H. Oort
Prof. V.A. Ambartsumian
Prof. L. Perek
Prof. C. de Jager
Prof. G. Contopoulos.

I am happy to extend a warm welcome to members who in the past have served on the Executive Committee of this Union, and who are attending the General Assembly:

Prof. A.A. Blaauw
Prof. W. Iwanowska
Prof. E. Müller
Prof. J.-C. Pecker
Prof. S. van den Bergh

and to the official representatives of the Adhering Organizations which support this Union.

Furthermore, I extend a hearty welcome to the official representatives of sister Unions, namely:

UNESCO	S. Raither
ESA	R. Bonnet
BIPM	B. Guinot
FAGS	E.A. Tandberg Hanssen
NASA	N. Hinners
IAF	D.M. Papagiannis
IUPAP	K. Larkin
IAG	I.I. Mueller
CCIR	A.R. Thompson
INTERCOSMOS	N.S. Kardashev
SCOSTEP	S.T. Wu
CODATA	D.R. Lide, Jr
COSPAR	H. Friedman
IUCAF	B. Robinson

I now ask those present to stand while the General Secretary reads the names of the members who have died since the XIXth General Assembly.

The General Secretary then read the following list:

AARONSON M.	FEDOROV E.P.
ABRAHAM H.	FISCHER P.L.
ALLEN C.W.	FRACASSINI M.
BECKER F.	FRICKE W.
BOBROVNIKOFF N.	GOKMEN T.
BONOV A.	GOLDBERG L.
BRAZ M.A.	HARO G.
CALAMAI G.	HOPPE J.A.
DE MOTTONI Y. P.	HORSKY Z.
DOUGLAS A.V.	HUMPHREYS C.J.
DUBOSHIN G.N.	HYNEK J.A.
ELYASBERG P.E.	INGRAO H.C.

IRIARTE B.	PELSENEER J.K.
KABURAKI M.	PELTIER L.
KANNO M.	PRZYBYLSKI A.
KEMP J.C.	ROBERTSON W.H.
KHOLOPOV P.N.	SADLER D.H.
KOTSAKIS D.	SANCHEZ M.C.
KROOK M.	SCHWERDTFEGER H.M.
KULIKOV K.A.	SERVAJEAN R.
KUPPERIAN J.E.	SEVERNY A.B.
KUZMIN G.G.	STEPANOV V.E.
LARINK J.	STROBEL W.
LOCHTE-HOLTGREVEN W.	STROMGREN B.
MCGEE J.D.	SUZUKI H.
MCVITTIE G.	TELEKI G.
MEURERS J.	TEMESVARY S.
MIYADI M.	THERNOE K.A.
MOFFETT A.T.	TUZI K.
MOHLER O.C.	VASILEVSKI S.
MUSTEL E.R.	VELGHE A.G.
NEVEN L.	WATERFIELD R.
NEVIN T.	WELIACHEW L.
NEWKIRK G.A.	WOOLEY R. v.d. R.
NIKONOV V.B.	ZEL'DOVICH Ya
ORLOV A.A.	ZHANG YU-ZHE
OVENDEN M.W.	ZIEBA A.

2. Appointment of Official Interpreters

The General Secretary appointed J. Lesh as official interpreter from French to English and R. Cayrel from English to French.

3. Report of the Executive Committee 1985-1987

The President invited discussion on the Report of the Executive Committee for the 3-year interval 1985-1988, as presented in IAU Information Bulletin No. 60.

The report has been given consideration by the Official Representatives of the Adhering Organisations. The financial section of the report will be scrutinised by the Finance Committee who will present their report in the second session of the General Assembly. (The Report of the Executive Committee follows in Chapter IV, pp. 79-101).

There being no points raised by Members of the Union from the floor, the General Assembly unanimously approved the report of the Executive Committee (1985-1987) subject to receiving the Report of the Finance Committee (see pp. 37-39).

4. Report of the General Secretary (January-August 1988)

Nominations for IAU Membership

The President asked the General Secretary to inform the General Assembly of the nominations for IAU Membership.

The General Secretary indicated that he had received almost 700 nominations for IAU membership. A further 53 nominations had been received from Commissions Presidents and Members of the Executive Committee.

Report by the General Secretary

First of all, I wish to thank most heartily the President of the IAU, Jorge Sahade and the Assistant General Secretary, Derek McNally, who were my partners in the team that attempted to run the affairs of the Union from the end of November 1985 until this date: it was a short term, but the amount of work was essentially the same as for the regular triennia, and, as many of you know, we had to take some non trivial decisions concerning the personnel in the Paris Secretariat. The team work is really appreciated when the situation is a bit difficult.

In the last two IAU Information Bulletins I indicated the changes that occurred in the Secretariat in Paris and do not plan to say more about those past events. I simply wish to state that the support of a very efficient Secretariat (containing a minimum of persons) is absolutely mandatory in order to successfully reduce the workload of the General Secretary, and to help him with all the activities (and deadlines!) inherent in his duty: this is something I definitely appreciated during a large fraction of my term, and I trust that my successor will be very well assisted by Monique Orine and Huguette Gigan. The secretarial support I received in Liège from Denise Fraipont since 1982 is gratefully acknowledged as well; it is furthermore a pleasure to mention that Viviana Soler in La Plata and Valerie Peerless in London were of great help to the other two Officers.

I also wish to thank the members of the Executive Committee and the Presidents of Commissions, Working Groups, and Committees for their collaboration.

In addition, I would like to express my gratitude to the Local Organizing Committee of the XXth General Assembly, in particular to Professor Arthur Davidsen, to the two "chevilles ouvrières", Karen Weinstock and Harold Screen, and to their collaborators, for the most impressive amount of efficient work they performed in the last years. It was really a pleasure being part of the team organizing this General Assembly.

On behalf of the Executive Committee I wish to say that we are thankful for the extensive financial support which has been given to this General Assembly and which has allowed the IAU together with the Local Organizers to support no less than 250 scientists, i.e. young astronomers, most of them from countries where our science is in a developing phase, and a few more senior researchers from countries with currency problems. I do hope that these grantees, as well as their colleagues from all over the world who come for the first time to an IAU General Assembly, and, in fact, that all the participants here in Baltimore will find this large gathering interesting and scientifically rewarding.

The programme in front of us is very full (250 sessions in 6.5 days; I take this opportunity to thank the Invited Speakers and all the organizers of the Joint Discussions, Joint Commission Meetings, Scientific sessions, etc.): the IAU members have received the programme a few weeks ago since it was printed in IB 60 and some of you have hopefully already had a look at it. In any case, all participants should be able to keep track of what is going on through the daily issues of the newspaper "IAU Today", and by regularly checking the notice boards. The boards, some of them beautifully decorated, are located at a strategic point near the mailboxes and the large and quite spectacular exhibit area.

As you realize, the coverage of this XXth General Assembly by the different types of news media is larger than on previous occasions: it is my hope that there will be an excellent collaboration between the scientists and the press, and that the numerous press conferences, interviews, etc., will lead to showing how exciting our science is, and how interesting this particular meeting is. Your best possible collaboration will be greatly appreciated.

Coming back to the Executive Committee report per se, I remind you that a draft report for the period November 85-December 87 has appeared in IAU IB 60 (pp. 20-26), and that the highlights of the activities of the Commissions have now been published in the "Reports on Astronomy" (IAU Transactions XXA, 708 pages). In the first 7 months of 1988 the largest part of our activities has been devoted to the preparation of this General Assembly; let me simply mention a few items that were not included in the report given in IB 60:

- one negative point first: because of the Secretariat changes, we were not able to keep the promise we had made earlier, i.e. to regularly publish updates of the IAU membership list. A new list will nevertheless appear as soon as possible after this General Assembly, and will include all the new members to be accepted here (around 790);
- the move of the IAU secretariat to its new offices will take place this coming November;
- we continued to provide some advice and help to Mr. R. Pansard-Besson who is preparing an extensive series of TV broadcasts on "Les Palais de la Découverte : de Stonehenge au Télescope Spatial": a very preliminary preview of the film will be shown here on August 11th, just before the second session of the General Assembly. It will be a reward for those who stay until the end of the Assembly... and who get up reasonably early after the closing banquet;
- work has continued on the IAU Style Manual, and a meeting with editors of the main astronomical journals has been organized. The results seem very encouraging; a quasi agreement exists on such difficult matters as abbreviations... and I hope this General Assembly will be in a position to endorse a resolution on this;
- more contacts have been made with several countries, which should lead to quite a number of new adherents to the Union;
- we are pleased to report that we received tremendous support from many countries concerning anti-space junk and anti-pollution activities; resolutions on these matters will be proposed here, and an IAU Colloquium on these topics will take place in Washington immediately after the General Assembly;
- the new International Earth Rotation Service (a joint venture of Commissions 19 and 31) is now a reality: birth took place on January 1st of this year;
- closer contacts with UNESCO exist, which may hopefully lead to joint programmes with our Union, i.e. to more activities in the frame of the promotion and development of astronomy, which is one important objective of the IAU.

There have of course been many other activities, and you will hear about most of them during the General Assembly. I will finish here by wishing you a most interesting and enjoyable meeting and by looking forward to the opportunity of seeing you in person during the coming days... even if the waiting list in front of my office may be a little long on some occasions."

The General Secretary's report was received with acclamation.

5. Report on the Work of the Special Nominating Committee

The President informed the Assembly that the Special Nominating Committee had selected the following IAU members for proposal as members of the Executive Committee from August 11, 1988.

As President

Professor Yoshihide Kozai (Japan)

As President-Elect

Professor Alexander A. Boyarchuk (USSR)

As Vice-Presidents continuing

Dr. Alan H. Batten (Canada)
 Professor Per Olof Lindblad (Sweden)
 Professor R. Kippenhahn (Germany, FR)

As Vice-Presidents

Professor V. Radhakrishnan (India)
 Professor Morton Roberts (USA)
 Professor Ye Shu Hua (China)

As General Secretary

Dr. D. McNally (UK)

As Assistant General Secretary

Dr. Jacqueline Bergeron (France)

As Advisers to the Executive Committee

Professor Jorge Sahade (Argentina)
 Dr. Jean-Pierre Swings (Belgium)

The President informed the Assembly that formal election would take place at the Final Session of the General Assembly.

6. Announcement of**Official Representatives of Adhering Organizations**

and

Representatives to vote on the Nominating Committee

As requested by the President, the General Secretary announced the following names:

<u>Country</u>	<u>National Representative</u>	<u>Nominating Committee Representative</u>
Argentina	R. Mendez	H. Levato
Australia	K.C. Freeman/ C.S.L. Keay	K.C. Freeman/ C.S.L. Keay
Austria	H.F. Haupt	H.F. Haupt
Belgium	P. Smeyers/ L. Houziaux	P. Smeyers

Brazil	J. Lépine	J. Lépine
Bulgaria	Z. Kovachev	M.K. Tsvetkov
Canada	C.R. Purton/ J.E. Hesser	J.E. Hesser
Chile	F. Noël	M. Rubio
China (Nanjing)	S.G. Wang	F. Tong
China (Taipei)	H.H. Wu	H.H. Wu
Colombia	-----	-----
Cuba	O. Alvarez	O. Alvarez
Czechoslovakia	V. Bumba	V. Bumba
Denmark	L.K. Christensen	L.K. Christensen
Egypt, AR	K. Aly	K. Aly
Finland	M. Valtonen/ K. Mattila	K. Lumme
France	R. Cayrel	G. Wlérick
Germany, DR	G. Ruben	H. Lorenz
Germany, FR	R. Kippenhahn	K. de Boer
Greece	J. Seiradakis	J. Seiradakis
Hungary	B. Szeidl	B. Szeidl
India	J.V. Narlikar	K.R. Sivaraman
Indonesia	B. Hidayat	B. Hidayat
Iran	Y. Sobouti	Y. Sobouti
Iraq	-----	-----
Ireland	P.A. Wayman	T.P. Ray
Israel	G. Shaviv	G. Shaviv
Italy	V. Castellani	G. Setti
Japan	D. Sugimoto/ K. Kodaira	D. Sugimoto
Korea DPR	-----	-----
Korea, RP	Nha Il Seong	Woo Jong Ok
Mexico	A. Serrano	S. Torres-Peimbert
Netherlands	H. van Woerden	H. van Woerden
New Zealand	E. Budding	E. Budding
Nigeria	S. Okoye	S. Okoye
Norway	-----	-----
Poland	J. Smak	B. Kolaczek
Portugal	J.P. Osorio	J.P. Osorio
Rumania	-----	-----

South Africa	M.W. Feast/ B. Warner	B. Warner
Spain	P.U.M. Catalan	C.A. Gimenez
Sweden	A. Sandqvist/ B. Gustafsson	A. Winnberg/ G. Lynga
Switzerland	B. Hauck	J.O. Stenflo
Turkey	D. Eryurt	Z. Aslan
United Kingdom	F.G. Smith	M. Smyth
Uruguay	G. Vicino/ G. Tancredi	G. Vicino/ G. Tancredi
USA	F. Drake	V. Trimble
USSR	A.A. Boyarchuk	V.K. Abalakin
Vatican State City	M. McCarthy	M. McCarthy
Venezuela	-----	-----
Yugoslavia	-----	-----

Acting Presidents of Commissions

The General Secretary announced that the Executive Committee had appointed the following persons to act for Presidents of Commissions unable to attend the General Assembly:

<u>Commission</u>	<u>Acting President</u>
15	J. Rahe
16	M. Davies & A. Brahic
49	L. Burlaga

7. Appointment of the Finance Committee

In accord with Statute 18(a), the General Assembly appointed the following Finance Committee consisting of one representative from each Adhering Body:

<u>Country</u>	<u>Category/ Units</u>	<u>Finance Representative</u>	<u>Deputy</u>
Argentina	III/4	H. Levato	
Australia	III/4	C.S.L. Keay	K.C. Freeman
Austria	I/1	H.F. Haupt	
Belgium	IV/6	P. Smeyers	
Brazil	II/2	J. Lépine	
Bulgaria	I/1	B.J. Kovachev	
Canada	VI/14	V. Gaizauskas	

Chile	I/1	G. Carrasco	
China (Nanjing)	V/10	Qu Qin-Yue	
China (Taipei)	I/1	Wu H.H.	
Colombia	I/1	-----	
Cuba	I/1	O. Alvarez	
Czechoslovakia	III/4	V. Vanysek	
Denmark	II/2	J.V. Clausen	
Egypt, AR	III/4	K. Aly	
Finland	I/1	K. Mattila	
France	VII/20	G. Wlérick	
Germany, DR	II/2	G. Ruben	
Germany, FR	VII/20	M. Grewing	
Greece	II/2	J. Seiradakis	
Hungary	II/2	B. Szeidl	
India	III/4	M.B.K. Sarma	
Indonesia	I/1	M. Wiramihardja	
Iran	I/1	Y. Sobouti	
Iraq	I/1	-----	
Ireland	I/1	P.A. Wayman	
Israel	II/2	G. Shaviv	
Italy	V/10	E. Proverbio	
Japan	VI/14	D. Sugimoto	K. Kodaira
Korea, DPR	I/1	-----	
Korea, RP	I/1	Yun Hong Sik	
Mexico	II/2	L.C. Bazuas	A. Serrano
Netherlands	IV/6	W.B. Burton	
New Zealand	I/1	E. Budding	
Nigeria	I/1	S. Okoye	
Norway	I/1	-----	
Poland	III/4	J. Smak	
Portugal	II/2	J.P. Osorio	
Rumania	II/2	-----	
South Africa	III/4	M.W. Feast	I.S. Glass
Spain	II/2	C.A. Gimenez	
Sweden	III/4	D. Dravins	
Switzerland	III/4	M. Mayor	
Turkey	I/1	-----	
United Kingdom	VII/20	F.G. Smith	
Uruguay	I/1	G. Vicino	G. Tancredi
USA	VIII/30	P. Boyce	

USSR	V/10	Y.S. Yatskiv
Vatican State City	I/1	J. Casanovas
Venezuela	I/1	-----
Yugoslavia	II/2	-----

8. **Appointment of the Resolutions Committee**

The President informed the Assembly that the Executive Committee proposed the establishment of a Resolutions Committee under the chairmanship of Dr. M. McCarthy, with Drs. A. H. Batten (Executive Committee Representative), L. Houziaux and H. Quintana as members. The General Assembly unanimously agreed to this composition of the Resolutions Committee.

9. **Revisions of the Statutes and By-Laws**

The changes adopted during the Extraordinary General Assembly are summarized in Chapter II, p. 19.

10. **Resolutions submitted by Adhering Bodies**

No resolutions were proposed to the XXth General Assembly by Adhering Bodies (a proposal from Sweden was withdrawn).

11. **Resolutions submitted by Commissions or by Associated Inter-Union Commissions**

See § 16, pp. 53-62.

The President then formally adjourned the meeting to 1988 August 11 at 10.00 and closed the Session with a word of thanks to the participants.

CHAPTER III

SECOND SESSION

Held in the Baltimore Convention Center

August 11, 1988, 10:00 to 12:00

Prof. J. Sahade, President in the Chair

Before passing to the Agenda, the General Secretary, called upon by the President, established the quorum for voting on financial matters and found eight Adhering Countries not represented. The General Assembly then appointed R. Henry, J. Narlikar & V. Trimble as Tellers.

12. Financial matters

Report of the Finance Committee

The General Secretary mentioned that copies of the financial report were in the hands of the official representatives and he thus invited the Chairman of the Finance Committee, Dr. P. Boyce, to read the report. Dr. Boyce reported as follows:

"The task of the Finance Committee is to inspect the accounts of the Union for the past three years in sufficient detail to assure that the accounts, indeed, are in order and to report its findings to the General Assembly. We compared the actual expenditures with the amounts budgeted and ascertained the cause of any major discrepancies. The Committee is also expected to look over the budget for the coming triennium, as proposed by the Executive Committee, and comment upon the fiscal implications of the projections. Much of the detailed work of the Committee was delegated to a Finance subcommittee which was appointed on 2 August, 1988. This report was modified and approved at the final meeting of the Finance Committee on 6 August, 1988.

The Finance Committee has inspected the accounts of the IAU for the period 1985-1987 and found everything to be in order. It also examined the accounting summary for the first half of 1988 and found no indication of any problems in the accounts for the current year. Certified external auditors have performed yearly audits of the IAU accounts. The auditors have found no irregularities and have certified that the accounts are an accurate representation of the state of the IAU finances. The Finance Committee, in making its examination of the accounts, has relied upon the auditors' reports for its information. Our examination leads us to confirm that the General Secretary has managed the finances in a prudent and fiscally responsible manner. In view of the complete change of personnel in the Secretariat during 1987 the General Secretary is to be congratulated for keeping the affairs of the Union running smoothly.

Operations of the Secretariat

The operations of the IAU Secretariat have benefitted greatly from the continuation of the modernization that had already started under the previous General Secretary. The membership files are up-to-date, and the ease of communicating with the Secretariat by means of Telex has been of significant help in making the meeting arrangements for this General Assembly. The IAU Secretariat soon will be moved from the gate house of the Paris Observatory into the building of the INSU/IAP. Access to better photocopy equipment, a fax machine and a tie-in to the electronic networks will help to improve further the daily operations of the Secretariat. The Finance Committee applauds this move.

In order to keep the operating costs low, our Union depends heavily upon volunteers to take on the jobs of General Secretary and Assistant General Secretary. We are grateful, not only to our busy colleagues who agree to provide their time and energy, but also to the institutions and governments who make such arrangements possible. In particular, the last two General Secretaries have enjoyed a high level of support that has contributed to keeping the operational costs of the Union at a very low level.

Comments on individual items

In looking over the accounts, the Finance Committee wishes to comment upon a few specific items. We are concerned that some of the Member countries are behind in the payment of their contributions and urge all countries to make their

We note that, owing to the financial problems within UNESCO, the level of support from ICSU has been cut in half during the past three years. We understand that the support is not expected to increase in the future. The proposed budget for the next triennium assumes the recent level of support from ICSU.

Since a six year contract with D. Reidel was concluded in 1985, the favorable level of income from IAU publications has been maintained and is expected to continue for the next three years. The Committee wishes to call attention to the decline in the market for the traditional astronomical publications in recent years. All publishers are feeling financial pressure that is expected to increase in the future and that may put this source of income at risk after the contract expires in 1991.

We feel it is appropriate to remind the General Assembly and the members of the Union that most of the funds that the IAU provides to the General Assembly are used to support the attendance of young astronomers. In this way, some of the contributions from member countries are also used to support young astronomers.

The Finance Committee notes that only about one-half of the funds budgeted for the exchange of astronomers in the present triennium have been used. The Finance Committee believes this indicates either that there is not sufficient awareness of this programme around the world or that there is now less need for a programme which can only provide travel support. We urge the Executive Committee to examine this programme to see how it might better fulfill the goal of promoting long-term visits of astronomers to institutions in other countries.

Operating surplus and account balances

The Committee notes that certain temporary circumstances have caused a positive net income for the past two years. These include a reduced salary expenditure in the Secretariat during 1987 and a fortuitous reduction in Executive Committee expenditures. This has resulted in an operating surplus. While this is not the deliberate operating policy of the Executive Committee, it is, nevertheless, accepted as prudent.

The accumulated balance in the IAU accounts acts as a reserve fund which now stands at somewhat more than one year of operations. The Finance Committee feels this adequate and, in view of the somewhat uncertain economic situation in the world, is very appropriate.

Proposed budget

The Committee has examined the proposed budget for the triennium 1989-1991. The income estimates are appropriately conservative. However, the expenses will grow by 12.6 percent, or slightly more than four percent per year. The members of the Executive Committee are more widely scattered, the General Assembly travel costs will be higher, and the increased IAU membership means increased costs. In view of the average inflation around the world, we find the proposed increases to be reasonable.

In forming our opinion about the costs to be expected for the support of the General Secretary and Assistant General Secretary we noted that the IAU is only covering a small fraction of the actual costs which the job entails. We note that the support of travel to IAU Symposia and Colloquia is proposed by the Executive Committee to be kept at the same level.

In order to cover the operating expenses of the Union, the Executive Committee has proposed an increase in the unit of contribution of slightly more than three percent per year. We understand the burden that these contributions impose upon some countries with large inflation rates. Nevertheless, the expenses of the Union have to be paid and the Committee strongly supports the proposed unit of contribution.

Fiscal management

The budget of the IAU is of sufficient size and complexity that we urge the Executive Committee to consider possible methods to provide appropriate assistance and advice to the General Secretary. We believe it may be possible to draw upon the expertise which exists within the membership of the IAU to accomplish this without raising costs.

Cost of General Assembly

The cost of holding a General Assembly was the subject of discussion within the Finance Committee. The current meeting has cost approximately \$ 1,500,000, about 1.5 times the entire last three years of the IAU operations. The Committee notes that more than 90 percent of the cost is borne by the local hosts, including an amount for the support of young astronomers that slightly exceeds the IAU contribution.

The Finance subcommittee is concerned that the cost of holding a General Assembly may make it impossible for many countries to act as host. We feel this would be an unfortunate situation. We are also concerned about the smaller than expected attendance at the last three General Assemblies. In fact, the fraction of IAU members attending the General Assembly has declined since 1970. Since the attendance severely impacts the finances of a meeting, we find this trend to be particularly disturbing. We recommend that the Executive Committee reconsider the functions of the General Assembly, analyze the costs and the factors that drive them, and consider ways in which the functions can be accomplished more effectively and cheaply."

Votes on proposed budgets for 1988 & 1989-1991

The President thanked Dr. Boyce and put the report of the Finance Committee to the vote, taking each item separately.

- . The proposed budget for 1988 was accepted unanimously.
- . The increase of the unit of contribution was approved by 163 votes: there were 4 abstentions.
- . The proposed budget 1989-1991 was accepted unanimously.

13. Financial Resolutions of the Executive Committee

None.

14. Resolutions submitted by the Executive Committee

The following resolutions were submitted by the Executive Committee:

Resolution A1: Amateur-Professional Cooperation in Astronomy

The XXth General Assembly of the International Astronomical Union,

recognising

the long-standing tradition of excellent and practical collaboration which has existed between amateur and professional astronomers, particularly during the first seven decades of our Union's existence;

noting

that additional communication for common projects is needed today between amateurs and professionals;

recommends

that a Working Group be established to foster this cooperation

and instructs

the General Secretary to communicate this proposal to the Executive Committee and to arrange for publication of this proposal by national and international organisations both amateur and professional.

Résolution A1 : Coopération entre les astronomes amateurs et professionnels en astronomie

La XXème Assemblée Générale de l'Union Astronomique Internationale,

reconnaisant

la tradition constante de collaboration excellente et fructueuse qui a existé entre les astronomes amateurs et professionnels, particulièrement pendant les sept premières décades de l'existence de l'Union,

notant

qu'une interaction plus poussée pour des projets communs est nécessaire aujourd'hui entre amateurs et professionnels,

recommande

l'établissement d'un Groupe de Travail pour favoriser cette coopération

et donne instruction

au Secrétaire Général de communiquer cette proposition au Comité Exécutif et de prendre les dispositions nécessaires pour la publication de cette proposition par les organisations nationales et internationales d'astronomes amateurs et d'astronomes professionnels.

Resolution A2: Adverse Environmental Impacts on Astronomy

The XXth General Assembly of the International Astronomical Union,

noting with grave concern

the increasing impact of light pollution, radio interference, space debris, and other environmental factors that adversely affect observing conditions from the ground and in space;

reaffirms

the special importance of the resolutions adopted by previous General Assemblies that relate to the protection of observatories (ground-based and in space) and of observing conditions including:

(1961) Resolutions	No. 1 & 2,	Transactions IAU XIB
(1964) Resolutions	No. 3 & 5,	Transactions IAU XIIB
(1967) Resolution	No. 2,	Transactions IAU XIIIB
(1970) Resolution	No. 10,	Transactions IAU XIVB
(1976) Resolutions	No. 8 & 9,	Transactions IAU XVIB
(1979) Resolution	No. 3,	Transactions IAU XVIIIB
(1982) Resolution	No. R9,	Transactions IAU XVIIIIB
(1985) Resolutions	No. B4, B5 & B7,	Transactions IAU XIXB;

strongly urges

- a. that all astronomers request civil authorities and others in their countries to implement solutions to preserve the quality of observing conditions,
- b. that all national organisations bring these concerns to the notice of adhering organisations, space agencies, and others in their countries;

notes with special appreciation

those agencies, communities, organisations, and individuals who have become aware of the issues and have begun to help; and

encourages

all others, everywhere, to become aware of the need to minimize the impact on the environment of light pollution, radio frequency interference, and space debris, which are causing increasingly severe impact on observing conditions for astronomy and which will compromise mankind's view of Universe;

and requests

through ICSU that SCOPE should study the nature and extent of this threat and advise the IAU of its findings.

ICSU

International Council of Scientific Unions

SCOPE

Scientific Committee on Problems of the Environment

Résolution A2 : Impacts sur l'environnement nuisibles pour l'Astronomie

La XXème Assemblée Générale de l'Union Astronomique Internationale,

constatant avec une grave inquiétude

l'impact croissant de la pollution lumineuse, des interférences dans le domaine des fréquences radio, des débris spatiaux et autres composantes de l'environnement qui affectent gravement les conditions d'observation au sol et dans l'espace,

réaffirme

l'importance spéciale des résolutions adoptées par les assemblées générales précédentes (et d'autres concernant des questions en rapport avec la protection des observatoires -au sol ou spatiaux- et des conditions d'observations passées à cette Assemblée Générale) comprenant la ou les :

(1961) Résolutions	No. 1 & 2,	Transactions UAI XIB
(1964) Résolutions	No. 3 & 5,	Transactions UAI XIIB
(1967) Résolution	No. 2,	Transactions UAI XIII B
(1970) Résolution	No. 10,	Transactions UAI XIV B
(1976) Résolutions	No. 8 & 9,	Transactions UAI XVII B
(1979) Résolution	No. 3,	Transactions UAI XVIII B
(1982) Résolution	No. R9,	Transactions UAI XVIII B
(1985) Résolutions	No. B4, B5 & B7,	Transactions UAI XIX B ;

insiste vigoureusement

- a. pour que tous les astronomes demandent aux autorités civiles et non-civiles de mettre en oeuvre des solutions pour préserver la qualité des conditions d'observation dans leur pays,
- b. pour que tous les organismes nationaux fassent connaître ces inquiétudes aux organismes adhérents, aux agences spatiales et autres, dans leur pays.

note et apprécie

le rôle joué par les individus, les communautés, les organisations et les agences qui ont pris conscience de ces problèmes et ont déjà apporté leur aide ; et,

encourage

tous, en tous lieux, à prendre conscience de la nécessité de minimiser les conséquences sur l'environnement de la pollution lumineuse, des interférences hertziennes et des débris spatiaux qui dégradent de façon croissante les conditions d'observation de l'astronomie et qui sont de nature à compromettre la vision de l'Univers par l'humanité.

et demande

via ICSU, que le SCOPE étudie la nature et l'étendue de cette menace et informe l'UAI de ses conclusions.

Resolution A3: Improvement of Publications

The XXth General Assembly of the International Astronomical Union

recognising

- the need to develop clear lines of communication between the various branches of astronomy and other related scientific disciplines;
- the desirability of promoting ease of access to information contained in the astronomical literature;
- the advantages that would follow from a reduction in the variety of the editorial requirements for the submission of papers and reports; and
- the importance of identifying astronomical objects by clear and unambiguous designations; and

noting

- the growth in the cadre of young scientists trained in the use of the International System (SI) of units and widespread adoption of SI in other scientific and technical areas; and
- the substantial measure of agreement that has been reached during the drafting of the new IAU Style Manual for the preparation of astronomical papers, reports and books;

recommends

that the authors and the editors of the astronomical literature adopt the recommendations in the IAU Style Manual, which is to be published in the Transactions of the Union and reprinted for wide distribution and greater convenience;

in particular, it urges authors and editors:

1. to use only the standard SI units and those additional units that are recognised for use in astronomy, as recommended by Commission 5;
2. to adopt the conventions for citations and references that are given in the IAU Style Manual and that are exemplified in Astronomy and Astrophysics Abstracts; and
3. to ensure that all astronomical objects referred to in the literature are designated clearly and unambiguously in accordance with the recommendations of the Union.

Note:

The Executive Committee recognises that the replacement of CGS by SI units will require an adjustment of practice on the part of many astronomers; this will no doubt take time. Consequently, we urge that the total conversion from CGS to SI units by all organs of communication shall be accomplished by the time of the next General Assembly (1991).

In the meantime we request that the major journals should publish, once a year, a table of conversions between CGS and SI units, as provided by Commission 5.

- SI
International System (units)
CGS
Centimeter, Gramme, Second (units)

Résolution A3 : Amélioration des Publications

La XXème Assemblée Générale de l'Union Astronomique Internationale,

reconnaissant

- le besoin de développer de bonnes voies de communication entre les différentes branches de l'astronomie et les autres disciplines scientifiques concernées;
- la désirabilité de promouvoir un accès facile à l'information contenue dans la littérature astronomique ;
- les avantages qui découleraient d'une réduction dans la variété des exigences éditoriales pour la soumission d'articles ou de rapports ; et
- l'importance de l'identification des sources astronomiques par des désignations claires non ambiguës, et :

notant

- la croissance de l'emploi du Système International d'unités SI par les jeunes scientifiques éduqués dans ce système et l'adoption très répandue du système SI dans d'autres domaines scientifiques ou techniques ; et
- la convergence de vues atteinte pendant l'élaboration du nouveau Manuel de Style" de l'UAI pour la préparation des articles, rapports et ouvrages astronomiques ;

recommande

que les auteurs et les éditeurs adoptent pour la littérature astronomique les recommandations contenues dans le Manuel de Style de l'UAI qui va être publié dans les Transactions de l'UAI et fourni sous forme de tiré à part, pour une large distribution et pour plus de commodité ;

en particulier, elle insiste pour que les auteurs et les éditeurs :

1. utilisent seulement les unités standards SI et les unités supplémentaires qui sont acceptées pour l'astronomie, telles que recommandées par la Commission 5,
2. adoptent les conventions pour les citations et les références qui sont données dans le Manuel de Style de l'UAI et dont des exemples sont disponibles dans Astronomy and Astrophysics Abstracts ; et
3. s'assurent que toutes les sources astronomiques auxquelles référence est faite dans la littérature soient désignées clairement et sans ambiguïté en accord avec les recommandations de l'Union.

Note :

Le Comité Exécutif se rend compte que le remplacement des unités CGS par les unités SI exigera une adaptation de la part de beaucoup d'astronomes; cela prendra du temps sans doute. En conséquence, il recommande avec insistance que la conversion totale des unités CGS vers les unités SI soit effective dans tous les organes de communication à l'époque de la prochaine Assemblée Générale (1991).

Dans l'intervalle, il recommande que les revues principales publient une fois par an une table de conversion entre les unités CGS et SI, fournie par la Commission 5.

Resolution A4: International Space Year (ISY) 1992

The XXth General Assembly of the International Astronomical Union,

considering

that the International Space Year (1992) will provide a great opportunity to further international cooperation within many areas of science and technology which are closely related to astronomy and astrophysics and also that the related educational and public information efforts may make important contributions to the dissemination of knowledge, also in countries which do not normally engage in space activities, and

noting

with satisfaction the interest shown by ICSU, COSPAR, IAF and other organisations in the International Space Year,

recommends

that all IAU Adhering Bodies, IAU Commissions and individual members actively participate in International Space Year activities, also during the preparatory phases.

ISY

International Space Year

ICSU

International Council of Scientific Unions

COSPAR

Committee on Space Research

IAF

International Astronautical Federation

Résolution A4: Année Internationale de l'Espace 1992

La XXème Assemblée Générale de l'Union Astronomique Internationale,

considérant

que l'Année Internationale de l'Espace (1992) fournira une remarquable occasion pour un accroissement de la coopération internationale dans de nombreux domaines de la Science et de la Technologie en étroite relation avec l'Astronomie et l'Astrophysique, et considérant aussi que les efforts correspondants dans le domaine de l'information du public ou celui de l'éducation peuvent conduire à une contribution importante dans la dissémination des connaissances, y compris dans des pays qui ne sont pas engagés régulièrement dans des activités spatiales, et

notant

avec satisfaction l'intérêt montré par l'ICSU, le COSPAR, l'IAF et d'autres organisations pour l'Année Internationale de l'Espace,

recommande

que les organismes adhérant à l'UAI, les Commissions de l'UAI et les membres de l'UAI à titre personnel, participent activement aux activités associées à l'Année Internationale de l'Espace, y compris pendant les phases préparatoires.

Resolution A5: Cooperation to Save Hydroxyl Bands

The XXth General Assembly of the International Astronomical Union,

noting

- a. the long standing concern of the International Astronomical Union for protecting radio astronomy from interference, particularly through resolutions passed at the General Assemblies in 1979, 1982 and 1985;
- b. the increasing levels of harmful interference to radio astronomy, particularly from space and airborne transmitters, which diminish the advantages of locating observatories at remote sites;
- c. the particularly high levels of harmful interference experienced consistently in the sub-band 1610.6-1613.8 MHz from navigation satellites which make observations of an astrophysically important hydroxyl line increasingly difficult;
- d. that the 1612 MHz hydroxyl line has assumed greatly increased importance since the 1979 World Administrative Radio Conference due particularly to the discovery of numerous OH/IR stars which have been used for absolute distance determination in the Galaxy and for understanding stellar evolution;
- e. that the World Administrative Radio Conference for the Mobile Services (WARC MOB-87) has also allocated the band 1610-1626.5 MHz to the Radio-Determination Satellite Service (RDSS), subject of footnote 743E of the Radio Regulations, which states that in Regions 1 and 3 harmful interference shall not be caused to the Radio Astronomy Service (RAS), and that in Region 2 several administrations have agreed to limited protection for the RAS;
- f. that the WARC MOB-87 in Resolution PLEN/1 has invited the CCIR to continue its studies in order to obtain more precise results concerning the conditions of sharing in the bands 1610-1625.5 MHz and 2483.5-2500-2516.5 MHz between the RDSS on the one hand and the RAS, among other services, on the other;

urges

1. that national administrations cooperate with IUCAF to examine means to prevent harmful interference to observations in the band 1610.6-1613.8 MHz from global navigation satellite systems, particularly in designing changes to existing systems and planning new systems;
2. that administrations adhering to the International Astronomical Union and the International Telecommunication Union strive for improved protection of the RAS in the 1610.6-1613.8 MHz band by upgrading the allocation status of the RAS to that of primary service in this sub-band at the next competent World Administrative Radio Conference;
3. that IUCAF, representing the IAU, respond rapidly to the invitation to continue studying in Study Group 2 of the CCIR the conditions for successfully sharing the band 1610-1626.5 MHz and examine the problems of second harmonic emission from RDSS transmitters in the band 2483.5-2500 MHz which could affect the RAS in the band 4800-5000 MHz;
4. that administrations operating satellites or satellite systems in the aeronautical navigation satellite service at 1.5/1.6 GHz frequencies protect the RAS from harmful interference by appropriately filtering unwanted emissions;

and instructs the President

to bring this Resolution to the attention of the Secretary General of the International Telecommunication Union.

WARC
 World Administrative Radio Conference
 RDSS
 Radio Determination Satellite Service
 RAS
 Radio Astronomy Service

IUCAF

Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science

Résolution A5 : Coopération pour la sauvegarde des bandes de OH

La XXème Assemblée Générale de l'Union Astronomique Internationale,

considérant

- a. la préoccupation constante de l'Union Astronomique Internationale en ce qui concerne la protection de la radioastronomie contre les parasites, préoccupation qui s'est manifestée en particulier par des résolutions des Assemblées Générales de 1979, 1982 et 1985 ;
- b. le niveau accru des parasites nuisibles à la radioastronomie provenant en particulier d'émetteurs spatiaux ou aéroportés, qui réduit l'avantage qu'il y a à placer les observatoires dans des sites isolés ;
- c. le niveau particulièrement élevé des parasites nuisibles produits régulièrement dans la sous-bande 1610.6-1613.8 MHz par des satellites de navigation, ce qui rend de plus en plus difficile les observations dans une raie de la molécule hydroxyle d'importance astrophysique ;
- d. que cette raie de la molécule hydroxyle à 1612 MHz a une importance beaucoup plus grande qu'à l'époque de la Conférence WARC de 1979, en raison notamment de la découverte de nombreuses étoiles OH/IR qui sont utiles à la détermination absolue des distances dans la Galaxie et à la compréhension de l'évolution stellaire ;
- e. que la Conférence Radio Administrative Mondiale pour les Services Mobiles (WARC MOB-87) a également alloué la bande 1610-1626.5 MHz au service des satellites de radio-détermination (RDSS), qui est l'objet de la note 743E des Règlements Radio, laquelle indique que dans les Régions 1 et 3 aucun parasite nuisible au service de radioastronomie (RAS) ne doit être produit et que dans la Région 2 plusieurs administrations se sont mises d'accord pour une protection limitée du RAS ;
- f. que la résolution PLEN/1 de la WARC MOB-87 a invité le CCIR à continuer ses études en vue d'obtenir des résultats plus précis concernant les conditions de partage des bandes 1610-1626.5 MHz et 2483.5-2500-2516.5 MHz entre le RDSS d'une part et d'autre par le RAS,

demande instamment

1. que les administrations nationales coopèrent avec l'IUCAF pour examiner les moyens d'éviter des parasites nuisibles aux observations provenant des systèmes globaux de navigation par satellites dans la bande 1610.6-1613.8 MHz, en particulier lors de la préparation de changements futurs aux systèmes existants ou de projets nouveaux ;
2. que les administrations adhérant à l'Union Astronomique Internationale et à l'Union Internationale des Télécommunications s'efforcent d'augmenter la protection du RAS dans la bande 1610.6-1613.8 MHz en améliorant le statut des allocations du RAS par rapport à celles du service primaire dans cette sous-bande lors de la prochaine Conférence Radio Administrative Mondiale ;
3. que l'IUCAF, représentant l'Union Astronomique Internationale, réponde rapidement à la demande de continuer à étudier au sein du Groupe d'Etude 2 du CCIR les conditions pour un partage satisfaisant de la bande 1610-1626.5 MHz et examine le problème de l'émission dans l'harmonique 2 des émetteurs du RDSS dans la bande 2483.5-2500 MHz qui pourrait indirectement affecter le RAS dans la bande 4800-5000 MHz ;
4. que les administrations responsables des satellites et des systèmes de satellite dans le service de navigation aéronautique par satellite émettant aux fréquences comprises entre 1.5 et 1.6 GHz protègent le RAS des parasites nuisibles grâce à un filtrage approprié des émissions indésirables ;

et charge le Président

de porter la présente résolution à la connaissance du Secrétaire Général de l'Union Internationale des Télécommunications.

Resolution A6: Sharing Hydroxyl Band with Land Mobile Satellite Services

The XXth General Assembly of the Union,

considering

- a. that the 1660-1660.5 MHz band is allocated to the Radio Astronomy Service on a shared, primary basis, and is used to observe hydroxyl lines, which are of the highest astrophysical importance, in many galaxies in the nearby Universe;
- b. that the World Administrative Radio Conference for the Mobile Services (WARC MOB-87) has also allocated the 1660-1660.5 MHz band to the land mobile satellite service;
- c. that WARC MOB-87 has added Footnote 730A to the Radio Regulations, allowing administrations to authorize aircraft stations and ship stations to communicate with space stations in the land mobile satellite service in the 1660-1660.5 MHz band;
- d. that CCIR Study Group 8 has established Interim Working Party 8/14 to study, among other characteristics of mobile satellite systems, the necessary criteria for frequency sharing between the various mobile satellite systems and the other services allocated the same bands;

urges

1. that IUCAF, in representation of the International Astronomical Union, interact, as a matter of urgency, with the Interim Working Party of CCIR Study Group 8 and with Study Group 2 to work out the necessary criteria under which the Radio Astronomy Service, and the land mobile satellite service and services authorized under Footnote 730A, may share the 1660-1660.5 MHz band;
2. that administrations adhering to the International Astronomical Union and to the International Telecommunications Union bear in mind at the next competent WARC the importance of the primary allocation to the Radio Astronomy Service in the band 1660.0-1660.5 MHz;

and instructs the President

to request the Director of the CCIR to bring this Resolution to the attention of the Chairman of Interim Working Party 8/14.

WARC

World Administrative Radio Conference

CCIR

Comité Consultatif International des Radiocommunications

IUCAF

Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science

RAS

Radio Astronomy Service

Résolution A6 : Partage de la bande Hydroxyle avec les services mobiles au sol

La XXème Assemblée Générale de l'Union Astronomique Internationale,

considérant

- a. que la bande 1660-1660.5 MHz est allouée au service de la radioastronomie sur la base d'une allocation primaire partagée et est utilisée pour l'observation des raies hydroxyles qui sont de très grande importance astrophysique, dans de nombreuses galaxies proches ;

- b. que la Conférence Administrative Mondiale Radio pour les Services Mobiles (WARC MOB-87) a aussi alloué la bande 1660-1660.5 MHz au service mobile terrestre de liaison avec les satellites ;
- c. que WARC MOB-87 a ajouté la note 730 A aux réglementations radio permettant aux administrations d'autoriser les stations sur avion ou sur bateau de communiquer avec les stations spatiales par les services mobiles dans la bande 1660-1660.5 MHz ;
- d. que le Groupe 8 d'étude du CCIR a établi un groupe de travail intérimaire 8/14 pour étudier, parmi d'autres caractéristiques des systèmes mobiles, les critères nécessaires au partage de fréquence entre les différents systèmes mobiles et les autres services auxquels certaines des bandes allouées au service des émetteurs mobiles sont aussi allouées.

recommande de façon pressante :

- 1. que l'UCAF, en tant que représentant de l'UAI, agisse, pour cause d'urgence, avec le Groupe de Travail par interim du Groupe d'Etude 8 du CCIR, et avec le Groupe d'Etude 2, afin de dégager les critères nécessaires pour que le service de radioastronomie, le service de satellite mobile et les services autorisés par la note 730A puissent partager l'allocation de la bande 1660-1660.5 MHz ;
- 2. que les administrations adhérant à l'UAI et à l'UIT aient présente à l'esprit, lors de la prochaine WARC compétente, l'importance de l'allocation primaire au Service de Radioastronomie de la bande 1660.0-1660.5 MHz ;

demande au Président

de prier le Directeur du CCIR de porter cette résolution à l'attention du Président du Groupe de Travail par intérim 8/14.

Resolution A7: Revision of Frequency Bands for Astrophysically Significant Lines

The XXth General Assembly of the International Astronomical Union,

recalling

- a. resolutions passed by the International Astronomical Union in 1979 and 1982 recommending the provision by national administrations of frequency bands for the astrophysically most important spectral lines;
- b. the need expressed in those resolutions to protect these frequency bands from in-band, band-edge and sub-harmonic emissions, especially from space-borne transmitters;
- c. the documentation of Study Group 2 of the CCIR in Recommendation 314 and Reports 224 and 697 concerning harmful interference to the Radio Astronomy Service;

and considering

the careful reviews by the International Astronomical Union in the period 1983-1988 of the astrophysically most important spectral lines;

recommends

that the International Astronomical Union take note of the revision of the frequencies of the astrophysically most important spectral lines listed in Tables 1 and 2 below;

and instructs the President

to bring the resolution to the attention of the Secretary General of the International Telecommunication Union.

CCIR

Comité Consultatif International des Radiocommunications

TABLE 1

Radio frequency lines of the greatest importance to radio astronomy
at frequencies below 275 GHz.

Substance	Rest Frequency
Deuterium (DI)	327.384 MHz
Hydrogen (HI)	1420.406 MHz
Hydroxyl radical (OH)	1612.231 MHz
Hydroxyl radical (OH)	1665.402 MHz
Hydroxyl radical (OH)	1667.359 MHz
Hydroxyl radical (OH)	1720.530 MHz
Methylidyne (CH)	3263.794 MHz
Methylidyne (CH)	3335.481 MHz
Methylidyne (CH)	3349.193 MHz
Formaldehyde (H ₂ CO)	4829.660 MHz
Methanol (CH ₃ OH)	12.178 GHz
Formaldehyde (H ₂ CO)	14.488 GHz
Cyclopropenylidene (C ₃ H ₂)	18.343 GHz
Water vapour (H ₂ O)	22.235 GHz
Ammonia (NH ₃)	23.694 GHz
Ammonia (NH ₃)	23.723 GHz
Ammonia (NH ₃)	23.870 GHz
Silicon monoxide (SiO)	42.821 GHz
Silicon monoxide (SiO)	43.122 GHz
Carbon monosulphide (CS)	48.991 GHz
Deuterated formylium (DCO ⁺)	72.039 GHz
Silicon monoxide (SiO)	86.243 GHz
Formylium (H ¹³ CO ⁺)	86.754 GHz
Ethynyl radical (C ₂ H)	87.3 GHz
Hydrogen cyanide (HCN)	88.632 GHz
Formylium (HCO ⁺)	89.189 GHz
Hydrogen isocyanide (HNC)	90.664 GHz
Diazenylium (N ₂ H ⁺)	93.17 GHz
Carbon monosulphide (CS)	97.981 GHz
Carbon monoxide (C ¹⁸ O)	109.782 GHz
Carbon monoxide (¹³ CO)	110.201 GHz
Carbon monoxide (C ¹⁷ O)	112.359 GHz
Carbon monoxide (CO)	115.271 GHz
Formaldehyde (H ₂ ¹³ CO)	137.450 GHz
Formaldehyde (H ₂ CO)	140.840 GHz
Carbon monosulphide (CS)	146.969 GHz
Water vapour (H ₂ O)	183.310 GHz
Carbon monoxide (C ¹⁸ O)	219.560 GHz
Carbon monoxide (¹³ CO)	220.399 GHz
Carbon monoxide (CO)	230.538 GHz
Carbon monosulphide (CS)	244.953 GHz
Hydrogen cyanide (HCN)	265.886 GHz
Formylium (HCO ⁺)	267.557 GHz
Hydrogen isocyanide (HNC)	271.981 GHz

TABLE 2

Radio frequency lines of the greatest importance
to radio astronomy at frequencies between 275 GHz & 900 GHz
(not allocated to Radio Astronomy in the Radio Regulations)
(* Central line of a group of three)

Diazenylium (N ₂ H ⁺)	279.511
Carbon monoxide (C ¹⁸ O)	329.330
Carbon monoxide (¹³ CO)	330.587
Carbon monosulphide (CS)	342.883
Carbon monoxide (CO)	345.796
Hydrogen cyanide (HCN)	354.484
Formyl ion (HCO ⁺)	356.734
Diazenylium (N ₂ H ⁺)	372.672
Water vapour (H ₂ O)	380.197
Carbon monoxide (C ¹⁸ O)	439.088
Carbon monoxide (¹³ CO)	440.765
Carbon monoxide (CO)	461.041
Heavy water (HDO)	464.925
Carbon (CI)	492.162
Water vapour (H ₂ ¹⁸ O)	547.676
Water vapour (H ₂ O)	556.936
Ammonia (¹⁵ NH ₃)	572.113
Ammonia (NH ₃)	572.498
Hydrochloric acid (HCl)	625.918 *
Carbon monoxide (CO)	691.473
Hydrogen cyanide (HCN)	797.433
Formyl ion (HCO ⁺)	802.653
Carbon monoxide (CO)	806.652
Carbon (CI)	809.350

Résolution A7 : Révision des bandes de fréquences pour les raies d'intérêt astrophysique

La XXème Assemblée Générale de l'Union Astronomique Internationale,

rappelant

- les résolutions de l'UAI en 1979 et 1982 recommandant la mise à disposition par les administrations nationales de bandes de fréquences pour les raies spectrales les plus importantes pour l'astrophysique ;
- la nécessité exprimée dans ces résolutions de protéger ces bandes de fréquences des émissions dans la bande, en bordure de bande et sous harmoniques, spécialement issues des émetteurs à bord d'engins spatiaux ;
- la documentation du Groupe d'étude 2 du CCIR dans la recommandation 314 et les rapports 224 et 697 concernant les parasites nuisibles au service de la radioastronomie ;

et considérant

les soigneuses révisions de la part de l'UAI dans la période 1983-1988 des raies spectrales les plus importantes pour l'astrophysique ;

recommande

que l'Exécutif de l'UAI prenne note de la révision des fréquences des raies spectrales les plus importantes en astrophysique répertoriées dans les tableaux I et II (cf. pp. 49 & 50),

et demande au Président

de porter cette résolution à l'attention du Secrétaire Général de l'Union Internationale des Télécommunications.

15. Resolutions proposed by the Resolutions Committee

At the request of the President, Dr. M. McCarthy, Chairman of the Resolutions Committee, reported on the work of the Committee. Ten resolutions were put forward by the Commissions (French translations are also included, see § 16, pp. 53-62).

Prior to reading the resolutions, Dr. McCarthy made the following announcement:

"Dear Colleagues,

In drafting proposals of the XXth General Assembly of the IAU, two trends can be noticed:

1. There were fewer specific proposals for common action requested by the Commissions of the Union. This we believe reflects an increased frequency of communications at the international level of Members assembled at symposia or colloquia sponsored by the Union, as well as other meetings for Members through national groups.
2. Exceptions to this trend were noted in an increased number of resolutions and requests in the field of astronomical ecology, concerned with the preservation of dark skies for earth based observations and those concerned with safeguarding bands in the radio frequency spectrum required for the advance of astronomy and those concerned with alarming restrictions for all science through the presence of an increasing amount of debris in space.

We thank the Executive Committee for their concerned care in guiding proposals concerning actions of astronomers outside and beyond the scope of strict commission matters: these are of concern to all scientists, but exceed the scope and competence of the Union's appointed Committee on Resolutions. I thank the Members of the Committee on Resolutions for their help and devoted service: Professor Dr. Leo Houziaux, Professor Dr. Alan H. Batten, Professor Dr. H. Quintana and all of Professor Swing's excellent secretarial staff."

Resolution B1: Extensions to FITS

The XXth General Assembly of the International Astronomical Union,

considering

the present situation of the transfer of catalogue and table data in digital form among astronomical institutes; and

noting

that significant improvements in portability can be made;

recommends

that all astronomical computer facilities recognise and support the rules for general extensions to the Flexible Image Transport System (FITS) including the extension for the exchange of catalogue and table data as described in Astronomy and Astrophysics Supplement Series 73, pp 359-364 and pp 365-372 (1988).

Résolution B1 : Extensions à FITS

La XXème Assemblée Générale de l'Union Astronomique Internationale,

considérant

la situation actuelle du transfert de données numériques sous forme de tables ou de catalogues entre établissements astronomiques,

notant

que des améliorations significatives de leur portabilité peuvent être accomplies,

recommande

que tous les centres de calcul astronomiques reconnaissent et appliquent les règles d'extension générales au Système Flexible de Transport d'Images (FITS), y compris l'extension pour l'échange de catalogues et de tables décrite dans Astronomy and Astrophysics Supplement Series 73, pp. 359 à 364 et pp. 365 à 372 (1988).

Resolution B2: Working Group on FITS

The XXth General Assembly of the International Astronomical Union,

considering

the high importance of the Flexible Image Transport System (FITS) for the exchange of digital data between astronomical institutes and for astronomical archives;

decides

to form a Working Group on FITS to maintain the existing FITS standards and to review, approve and maintain future extensions to FITS, recommended practices for FITS implementations, and the thesaurus of approved FITS keywords.

Résolution B2 : Groupe de travail sur FITS

La XXème Assemblée Générale de l'Union Astronomique Internationale,

considérant

la grande importance du Système Flexible de Transport d'Images (FITS) pour l'échange de données numériques entre les établissements astronomiques et pour les archives astronomiques,

décide

de former un groupe de travail sur FITS pour maintenir les normes existantes de FITS et pour examiner, approuver et maintenir les extensions futures à FITS, ainsi que les pratiques recommandées dans la mise en oeuvre de FITS, et le thesaurus des mots-clés approuvés de FITS.

Resolution B3: Endorsement of Commission Resolutions

The XXth General Assembly of the International Astronomical Union,

having

full confidence in its Commissions,

endorses

the Resolutions submitted by them to the Resolutions Committee for publication in the official languages of the Union, French and English, in Transactions IAU XXB.

Resolution B3: Soutien des Résolutions des Commissions

La XXème Assemblée Générale de l'Union Astronomique Internationale,

accordant

son entière confiance à ses Commissions,

souscrit

aux autres résolutions qu'elles ont soumises au Comité des Résolutions, pour être publiées dans les deux langues officielles de l'Union, le français et l'anglais dans les Transactions de l'UAI, volume XXB.

16. Resolutions Proposed by Commissions

The following resolutions were proposed by Commissions:

Resolution C1: Working Group on Reference Frames (WGRF) Resolutions

Commissions 4, 7, 8 & 24

recommend

the adoption of the following resolutions after their joint meeting to discuss the progress and needs of the Working Group on Reference Frames:

1. in order to avoid a confusing proliferation of reference frames, the FK5 should be retained as the IAU reference at optical wavelengths for the present and immediate future;
2. in order to derive the maximum possible information from the accumulated classical observations, and most especially from the fundamental observations, ab initio discussions of these latter observations should be encouraged and supported;
3. the International Astronomical Union should adopt a celestial reference based upon a consistent set of coordinates for a sufficient number of suitable extragalactic objects when the required observational data have been successfully obtained and appropriately analyzed. This reference frame should be based upon a common, simultaneous discussion of the observations using agreed upon conventions. This reference frame is likely to be based, initially at least, exclusively upon radio astrometry, and transformations between this reference frame and the conventional celestial and terrestrial reference systems as well as the dynamical frame should be defined. The reference frame should be updated as required;
4. the determination of the positions of radio sources at all possible wavelengths should be continued and accelerated so as to achieve the best possible all sky coverage and overall accuracy, while testing the suitability of candidate sources; the International Astronomical Union should encourage institutions to provide adequate time on appropriate instruments to ensure that the necessary astrometric observations are obtained;
5. the detection of radio stars and the determination of their positions and proper motions should be a major goal of astrometry; the determination of optical positions and proper motions of stars with respect to extragalactic objects should be encouraged. All applicable methods, particularly astrometry on large reflectors, should be used;

6. optical and infrared astrometric interferometry should be developed vigorously for use on the ground and possibly later in space. The related efforts in imaging interferometry have astrometric implications and these developments should also be supported. In all cases, the direct determination of the positions of extragalactic objects at optical/infrared wavelengths must be a major goal.

WGRF

Working Group on Reference Frames

Résolution C1 : Résolutions du Groupe de Travail sur les Repères de Référence (WGRF)

Les Commissions 4,7,8 & 24

recommandent

l'adoption des résolutions suivantes après leur discussion commune au sujet des progrès accomplis par le Groupe de Travail sur les repères de référence et sur les besoins de ce dernier :

1. que, afin d'éviter une prolifération gênante des repères de référence, le FK 5 soit conservé comme repère de référence de l'UAI aux longueurs d'onde optiques pour le moment et dans un avenir immédiat ;
2. que, afin de déduire l'information maximale possible des observations classiques cumulées, et plus particulièrement des observations fondamentales, des discussions ab initio de ces dernières soient encouragées et soutenues ;
3. que l'Union Astronomique Internationale adopte un repère de référence céleste fondé sur un ensemble cohérent de coordonnées, pour un nombre suffisant de sources extragalactiques convenables, après que les données observationnelles requises aient été obtenues avec succès et aient été convenablement analysées. Ce repère de référence devrait être fondé sur une discussion commune des observations et en utilisant des conventions ayant fait l'objet d'un accord préalable. Ce système de référence sera vraisemblablement, du moins au début, fondé exclusivement sur l'astrométrie dans le domaine des radiofréquences. Des transformations entre ce système de référence et les systèmes traditionnels terrestres et célestes devraient être définies, de même qu'avec le repère de référence de la dynamique. Le repère de référence devrait être révisé en fonction des besoins.
4. que soit continuée et accélérée la détermination de la position des radio-sources à toutes les longueurs d'onde possibles, de manière à réaliser la meilleure couverture du ciel et la meilleure précision globale, tout en vérifiant l'adéquation des sources candidates. L'Union Astronomique Internationale devrait encourager les organismes compétents à fournir suffisamment de temps sur les instruments appropriés pour assurer l'acquisition des observations astrométriques nécessaires ;
5. que la détection des radio-étoiles et la détermination de leur position et de leurs mouvements propres deviennent un but majeur de l'astrométrie ; que la détermination des positions optiques et des mouvements propres des étoiles par rapport aux sources extra-galactiques soit encouragée. Toutes les méthodes applicables, en particulier l'astrométrie au moyen des grands télescopes devraient être utilisées ;
6. que l'interférométrie optique et infrarouge soit développée vigoureusement au sol dans un premier temps, et plus tard sans doute dans l'espace. Les efforts associés en imagerie par interférométrie ont des implications astrométriques et ces développements devraient aussi être soutenus. Dans tous les cas, la détermination directe de la position des sources extragalactiques aux longueurs d'onde optique et infrarouge doit être un objectif majeur.

Resolution C2: WGRS - A Continuing Intercommission Project

Commissions 4,7,8,19,20,24,31,33 & 40

noting

the proliferation of Working and Study Groups which deal with various matters of concern to these Commissions;

recognising

the necessity of considering such matters carefully along with the inevitability of scientific interrelationships among them;

thank

the Chairpersons and Members of the Working Groups on Nutation and Astronomical Constants for their efforts; and

recommend

1. that the Working Group on Reference Systems (WGRS) be continued as an intercommission project and that it concern itself with Nutation, Astronomical Constants, Origins, Reference Frames and Time;
2. that appropriate Study Groups be formed as required and that the current chairman continue in office, and that Commissions 4,7,8,19,20,24,31,33 and 40 and the IAG be invited to appoint members;
3. that the International Astronomical Union support the efforts of the Intercommission Project by providing funds for travel of members to attend the Working Group meetings;
4. that the WGRS produce a draft report with specific recommendations at least six months before the General Assembly;
5. that close ties be maintained between the International Astronomical Union, as represented by the WGRS, and the Geodesic Community, as represented by the IAG/IUGG;
6. that a close liaison with the IERS be continued.

IAG

International Association of Geodesy

IUGG

International Union of Geodesy & Geophysics

IERS

International Earth Rotation Service

Résolution C2 : Reconstitution du WGRS

Les Commissions 4,7,8,19,20,24,31,33 & 40

constatant

la prolifération de groupes d'étude et de travail s'occupant de différents sujets concernant ces commissions ;

reconnaissant

la nécessité de prendre en considération ces sujets soigneusement, ainsi que les interconnexions scientifiques inévitables entre eux ;

remercient

de leurs efforts les Président(e)s et les membres des groupes de travail sur la nutation et sur les constantes astronomiques ; et

recommandent

1. que le Groupe de Travail sur les Systèmes de Référence (WGRS) soit reconduit en tant que groupe de travail intercommission et qu'il s'occupe de la nutation, des constantes astronomiques, des origines, des repères de référence et du temps ;
2. que soient créés des groupes d'études appropriés si nécessaire, que le Président actuel poursuive son mandat et que les commissions 4, 7, 8, 19, 20, 24, 31, 33 et 40 et l'IAG soient invitées à y nommer des membres ;
3. que l'Union Astronomique Internationale soutienne les efforts de ce groupe intercommission en fournissant des crédits pour les voyages des membres se rendant aux réunions du Groupe de Travail ;
4. que le Groupe de Travail sur les Systèmes de Référence fournisse un rapport provisoire avec des recommandations spécifiques au moins six mois avant l'Assemblée Générale ;
5. que des liens étroits soient maintenus entre l'Union Astronomique Internationale, représentée par ce Groupe de Travail, et la communauté géodésique représentée par l'IAG/IUGG ;
6. qu'une liaison suivie avec l'IERS soit maintenue.

Resolution C3: Flare 22 Programme

Commission 10

recognising

the value of a coordinated scientific programme for the study of the physical processes and mechanisms in flares and solar active phenomena, which are common to a large variety of astrophysical objects and are responsible for planetary phenomena that affect the terrestrial environment;

noting

that a comprehensive study of all these components of solar activity is beyond the capabilities of anyone country, and that several countries -including the USA, the USSR and China (Nanjing)- already have detailed plans for coordinated studies during the next solar maximum;

and noting

that these countries have expressed willingness to cooperate in a coordinated international campaign;

proposes

that during the maximum of cycle 22, the International Astronomical Union co-sponsors the Flare 22 programme, under the auspices of the Solar Terrestrial Energy Programme (STEP) of SCOSTEP; and

recommends

that a member of Commission 10 be appointed to the Flare 22 Steering Committee.

STEP

Solar Terrestrial Energy Programme

SCOSTEP

Scientific Committee on Solar-Terrestrial Physics

Résolution C3: Programme d'étude des éruptions du cycle 22

La Commission 10

reconnaissant

la valeur d'un programme scientifique coordonné pour l'étude des processus physiques et des mécanismes produisant les éruptions chromosphériques et les phénomènes actifs solaires, lesquels sont communs à une grande variété d'objets astrophysiques et qui sont responsables des phénomènes interplanétaires affectant l'environnement terrestre,

prenant note

qu'une étude exhaustive de toutes les composantes de l'activité solaire dépasse les capacités d'un seul pays, et que, d'autre part, plusieurs pays -dont les Etats-Unis d'Amérique, l'URSS et la Chine (Nanjing)- ont des projets d'études coordonnées pour le prochain maximum solaire,

et prenant note

que ces pays ont exprimé leur volonté de coopérer dans une campagne internationale,

propose

que, durant le maximum du cycle 22, l'Union Astronomique Internationale parraine le programme Flare 22 sous les auspices du Solar Terrestrial Energy Programme (STEP) du SCOSTEP,

et recommande

qu'un membre de la Commission 10 soit désigné comme membre du comité de direction de Flare 22.

Resolution C4: Continuous Survey of Solar Phenomena

Commissions 10 & 12

considering

the scientific importance of ensuring a continuous long term survey of solar phenomena as observed in photospheric, chromospheric and coronal layers, in the solar wind and in solar-terrestrial relations;

recommends

1. the pursuit of these types of continuous observations wherever they are already conducted;
2. that other observatories should undertake similar observations, in order to ensure broad longitude coverage;
3. that financial assistance be provided by the International Astronomical Union for particular programmes which have been previously recommended by Commissions 10 and 12 and in particular the essential Debrecen photoheliographic surveys which face a most difficult financial situation.

Résolution C4 : Surveillance continue des phénomènes solaires

Les Commissions 10 & 12

considérant

l'importance scientifique d'assurer une surveillance continue à long terme des phénomènes solaires observés dans les couches photosphériques chromosphérique et coronale, dans le vent solaire et dans les relations Soleil-Terre ;

recommandent

1. la poursuite de ce genre d'observations continues là où elles sont déjà conduites ;
2. que d'autres observatoires entreprennent des observations similaires afin d'assurer une large couverture en longitude ;
3. qu'une aide financière soit fournie par l'Union Astronomique Internationale pour des programmes particuliers qui ont été recommandés par les Commissions 10 et 12, en particulier les surveillances essentielles photohéliographiques Debrecen qui sont confrontées à une situation financière très difficile.

Resolution C5: Databases on Minor Planets

Commission 15

endorses

the continued maintenance of a database on minor planets; and

recommends

the establishment of a comparable database on comets. The Working Groups on Minor Planets and on Comets are charged with the responsibility of defining and monitoring the compilation, updating, and dissemination of the respective databases.

Résolution C5 : Bases de données sur les petites planètes

La Commission 15

appuie

la continuation de la maintenance d'une base de données sur les petites planètes ; et

recommande

l'établissement d'une base de données comparable pour les comètes. Les groupes de travail sur les petites planètes et les comètes sont investis de la responsabilité de définir et de diriger la compilation, la mise à jour et la diffusion de ces bases de données, respectivement.

Resolution C6: Extension of Global Position Catalogues

Commission 24

emphasizes

the urgent need to extend global position catalogue work to substantially fainter magnitudes (fainter than $m_V = 15$) by all available and newly developed instrumentation.

Résolution C6 : Extension des Catalogues Globaux de Positions

La Commission 24

insiste

sur l'urgence d'étendre les travaux sur les catalogues de position couvrant tout le ciel à des magnitudes beaucoup plus élevées ($m_V = 15$ et bien au-delà) tant à l'aide des instruments disponibles que ceux en cours de développement.

Resolution C7: Availability of the Global Positioning System (GPS)

Commission 31

considering

- a. that the Global Positioning System (GPS) has provided an invaluable service to astrometry and to international timing; and
- b. that millisecond pulsar timing has progressed to unprecedented precision and yields new astrophysical insights in our Galaxy, while promising more; and
- c. that the precision of the Database, which dates from October 1984 is of high quality due to the availability of GPS; and
- d. that the continuity of this Database is very important for millisecond pulsar metrology and the international timing community;

thanks

those responsible for the invaluable service GPS has provided, and urges its full scale continuance.

Résolution C7 : Disponibilité du GPS

La Commission 31

considérant

- a. que le Global Positional System (GPS) a rendu des services inestimables en astrométrie et dans la mesure internationale du temps ;
- b. que le chronométrage des pulsars millisecondes a progressé jusqu'à une précision inégalée et fournit des vues nouvelles sur l'astrophysique de la galaxie, tout en promettant encore davantage ; et
- c. que la précision de la base de données, débutant en octobre 1984 est de grande qualité grâce à la disponibilité du GPS ; et
- d. que la continuité de cette base de données est très importante pour la métrologie des pulsars millisecondes et la communauté internationale de la mesure du temps ;

remercie

les responsables qui ont permis que le GPS ait pu rendre ces services inestimables et recommande vivement la continuation de ces services dans leur intégrité.

Resolution C8: Need for Accurate Time

Commission 31

considering

- a. that there is a scientific need for accurate time and frequency comparisons between the national time scales and the new frequency standards under development; and
- b. that at the moment, it is not possible to compare accurately the best available atomic frequency standards; and
- c. that methods for time and frequency comparisons are now in the process of being evaluated, for example, VLBI, one-way and two-way pseudo-random noise signals, laser techniques on ground and in satellites, and TV signals;

recommends

1. that investigations on all the proposed or new time comparison methods should be actively pursued;

2. that simultaneous campaigns of mutual comparison should be performed; and
3. that the relevant activities be coordinated by, and results be published under the auspices of, the BIPM.

BIPM

Bureau International des Poids et Mesures

Résolution C8 : Besoin d'un temps exact

La Commission 31

considérant

- a. qu'il existe un besoin scientifique pour des comparaisons exactes du temps et des fréquences des échelles nationales avec les nouveaux étalons de fréquence en cours de développement ; et,
- b. qu'en ce moment, il n'est pas possible de comparer avec exactitude les meilleurs étalons atomiques de fréquence disponible et
- c. que plusieurs méthodes de comparaison de temps et de fréquences sont maintenant en cours d'évaluation, par exemple, VLBI, signaux pseudo-aléatoires à un sens ou aller et retour, techniques laser au sol ou embarquées et signaux de télévision ;

recommande

1. que l'étude de toutes les méthodes déjà proposées ou nouvelles de comparaison de temps soit activement poursuivie ;
2. que des campagnes simultanées de comparaisons mutuelles soient exécutées, et
3. que les activités correspondantes soient coordonnées par le BIPM, et les résultats publiés sous les auspices de ce dernier.

Resolution C9: IAU Contribution to FAGS

Commissions 19 & 31

considering

the importance of the development of the International Earth Rotation Service (IERS) for many fields in astronomy, geodynamics and astrophysics, and the necessity for this service, as well as for the other astronomical services of the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) which foster the participation of new countries, coordinate international and inter-technique activity in observation and analysis, and disseminate worldwide high precision data; and

recognising

that the support of FAGS provides a unique possibility for developing such activities;

recommend

that the Presidents of Commissions 19 and 31, in collaboration with the Presidents of other IAU Commissions involved in services supported by FAGS, propose a report to the IAU Executive Committee by June 1989, recommending an increased contribution to FAGS.

Résolution C9 : Contribution de l'UAI à FAGS

Les Commissions 19 & 31

considérant

l'importance du développement du Service International de la Rotation Terrestre (IERS) pour de nombreux domaines de l'astronomie, de la géodynamique et de l'astrophysique et la nécessité de disposer de ce service ainsi que les autres services astronomiques de la Fédération des Services d'Analyse de Données en Astronomie et en Géophysique (FAGS), qui encourage la participation de nouveaux pays, coordonne les activités internationales et intertechniques pour les observations et leur analyse, et diffuse dans le monde entier des données de haute précision ; et

reconnaissant

que le soutien de FAGS fournit une possibilité unique pour le développement de telles activités ;

recommandent

que les Présidents des Commissions 19 et 31, en collaboration avec les Présidents des autres Commissions de l'UAI concernés par des services relevant de FAGS, proposent un rapport au Comité Exécutif de l'UAI d'ici juin 1989, recommandant un accroissement de la contribution de l'UAI à FAGS.

Resolution C10: Needed History on BIH and IPMS

Commissions 19 & 31

noting

the significant impact and contribution that the BIH and IPMS have made to astronomy and geodesy over the years of their existence; and

recognising

that a suitable history of their activities does not exist;

ask

that the Presidents of the IAU, the IAG, and URSI request B. Guinot and S. Yumi to write a history of the two Services.

BIH

Bureau International de l'Heure

IPMS

International Polar Motion Service

IAG

International Association of Geodesy

URSI

Union Radio-Scientifique Internationale

Résolution C10 : Besoin de l'histoire du BIH et du IPMS

Les Commissions 19 & 31

notant

l'impact significatif que le BIH et l'ISPM ont eu sur l'astronomie et la géodésie pendant leurs années d'existence et leur contribution à ces deux disciplines, ;

reconnaissant

qu'il n'existe pas une histoire adéquate de leurs activités ;

demandant

que les Président de l'UAI, de l'IAG et de l'URSI sollicitent de B. Guinot et S. Yumi d'écrire l'histoire de ces deux services.

17. Appointment of the Special Nominating Committee (SNC)

The President asked the General Secretary to report on the names of the Members proposed for appointment by the General Assembly to the Special Nominating Committee 1988-1991. These persons will be convened by the President of the IAU for the purpose of proposing names to the XXIst General Assembly (1991) for the IAU Executive Committee membership (1991-1994). The four persons appointed are:

M. McCarthy	(Vatican)
G. Field	(USA)
R. Sunyaev	(USSR)
L. Woltjer	(Netherlands/ESO)

The Member of the SNC appointed by the Executive Committee is:

J. Rahe	(Germany, FR)
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These appointments were unanimously confirmed by the General Assembly.

Note:

The President and Past President are Members of the SNC. The General Secretary and Assistant General Secretary are consultants to the SNC.

18. Nomination of new Members of the Union

The General Secretary announced that the Executive Committee had, on the proposal of the Adhering Bodies and with the advice of the Nominating Committee, admitted 792 new Members to the Union. The names of the new Members were displayed in a prominent place during the course of the General Assembly. The names will be incorporated in the alphabetical list of IAU Members to appear in Transactions Vol. XXB.

19. Applications for IAU Membership

Application from Algeria

The President invited Dr. H. Benhallou, representative of Algeria, to present an application for full membership from Algeria:

"Chers Collègues,

L'Algérie, pays en voie de développement, a pleinement pris conscience de l'intérêt de la recherche scientifique, aussi bien du point de vue culturel que du point de vue moyens de développement. Concernant l'astronomie, nous n'avons pas oublié que pendant plus d'un siècle au cours de la présence française, l'Observatoire Astronomique de Bouzoniah a connu une intense activité de recherche, particulièrement en participant au programme international de la Carte du Ciel. Par ailleurs, la lunette méridienne, l'astrolabe, et le coudé avaient contribué à de nombreuses observations.

Au lendemain de l'indépendance, chez nous, la priorité a été donnée à la formation du potentiel scientifique humain, ainsi qu'à la sauvegarde des possibilités de relance de toute activité de recherche en général.

Puis, les choses ont favorablement évolué. C'est ainsi que l'Algérie s'est dotée d'un centre de recherche en astronomie, astrophysique et géophysique et est déjà membre depuis quelques années de l'IUGG.

Aujourd'hui, je suis bien content d'être parmi vous pour vous confirmer officiellement notre demande d'adhésion à l'Union Astronomique Internationale. En effet, notre potentiel humain en chercheurs en astronomie est consistant (20 magisters et docteurs), un début de coopération est lancé avec la France et nous estimons que nous pouvons honorablement faire face à nos responsabilités vis à vis de l'UAI tout en espérant sa contribution au développement de l'astronomie en Algérie.

Je vous remercie."

Application from Iceland

The President invited Professor T. Saemundsson, representative of Iceland, to present an application for full membership from Iceland:

"Mr. President, Members of the Union, Ladies and Gentlemen,

Some time ago, my good friend, Dr. Derek McNally, Assistant General Secretary of the IAU, wrote me a letter suggesting that Iceland apply for membership of the IAU. Being an honest fellow, Derek did not dwell on the supposed benefits to astronomy of the proposed membership. Instead, he made it quite plain that the IAU needed more money and that the Executive Committee was searching every corner of the globe -or should I say the Solar System- for possible contributors.

I must admit that my first reaction to Derek's suggestion was one of scepticism. Iceland is a small country, with no astronomical observatory. Opportunities for professional work in astronomy are extremely limited. The University of Iceland does not offer a degree course in astronomy. Few Icelanders have gone abroad to study astronomy or astrophysics, but those who have returned to Iceland have seldom been able to continue working in their area of specialization. Instead, in order to make a living, they have had to seek employment in other fields.

However, there are signs of progress. Thirty years ago, when I was working for my degree, there was only one person in Iceland with a degree in astronomy. Today we have half a dozen people who are knowledgeable in fields as diverse as solar-terrestrial relations, cosmic rays, neutron stars, plasma physics and the history of astronomy. Astronomy courses at the University of Iceland are being expanded, and there is serious talk about forming a professional astronomical society. Public interest in astronomy is high and there is an amateur astronomical association with a membership of 100 or so.

For a small country like Iceland, cooperation with other countries in areas like astronomy is essential. Without such cooperation, each person is bound to remain isolated in his own field, with no one to talk to and no access to advanced observational facilities. Fortunately, technical developments are fast reducing the geographic isolation of astronomers everywhere. The advent of electronic mail, for instance, has made it incredibly easy for individuals to correspond with colleagues in distant countries. This was brought home to me vividly last year when a supernova in the Large Magellanic Cloud created a steady stream of news which could be read almost without delay at a computer terminal. Such a breakthrough in communications is likely to strengthen the ties between astronomers worldwide. For places like Iceland the results might well be dramatic.

In the light of these developments, Iceland's application to join the IAU is seen to be, not just an empty gesture, but a logical step in international cooperation. I see reason to hope that this form of cooperation will stimulate and support the growth of an astronomical community in Iceland.

Thank you."

Application from Malaysia

The President invited Dr. M. Othman, representative of Malaysia, to present an application for associate membership from Malaysia:

"Although Malaysia has taken significant strides in other fields of science, the science of astronomy and space has largely been neglected. Recent interest, however, has resulted in a level of activity which is by no means negligible.

The teaching of astronomy at the undergraduate level is done at one college and three universities, namely the National University, the University of Malaysia and University of Technology. The students taking these courses range from non-science majors, surveyors to final year physics students. A postgraduate programme is presently available at only one university, namely the National University. Research in astronomy is carried out by astronomers in three universities, namely University of Science Penang (calendrical astronomy), University of Malaysia and the National University (M-stars and cosmology).

There are currently four scientists actively involved in astronomy, that is, they are teaching or publishing papers. Three of these have Ph.D's and one an MSc. Three more are working towards postgraduate degrees in fields that are related to astronomy. Most of the astrophysical research done to date has been carried out overseas.

In terms of popularization of astronomy, there have been several exhibitions for the public in different areas in Malaysia. There are two amateur societies, namely the Astronomical Society of Malaysia and the Islamic Astronomical Society. In June 1988, an international conference on the Islamic Calendar was held in Penang.

As far as the future is concerned, University of Science in Penang, in association with the Islamic Religious Department, will set up an Astronomy Center. An observatory is being planned by the National University which will strengthen the existing postgraduate programme and where we hope to carry out collaborative astrophysical work with other countries.

In education, two more universities are planning to offer introductory astronomy courses. The Ministry of Education has decided to include astronomy as a separate subject in the new secondary school curriculum. The old one did not have any astronomy in it. A Planetarium in Kuala Lumpur is currently being considered by the Malaysian government.

The interest in astronomy in Malaysia is high and the greatest demand is in education. The number of qualified astronomers who are able to teach in the Malaysian language is very small indeed and we hope to increase this number very soon.

We join the IAU in the hope of strengthening international contact and, more importantly, to establish international collaborative programmes.

Ladies and Gentlemen, on behalf of the Institute of Physics, Malaysia, I hereby submit for your consideration an application for Malaysia to be an Associate Member of the International Astronomical Union.

Thank you."

Application from Morocco

The President invited Dr. S. Kadiri, representative of Morocco, to present an application for full membership from Morocco:

"Mr. President, Ladies and Gentlemen,

When we learned that Professor Sahade was to visit Morocco in November 1987, we were quite concerned. What would the President of the IAU think of Moroccan astronomy?

To be sure, we have a young group of University professors and a young group of research workers at the National Research Center, but our resources are modest. On this latter point, Professor Sahade showed us that the hope for the development of astronomy in Morocco lies in us; and for that, we are extremely grateful to him.

Allow me to take advantage of this occasion that brings us together to thank Dr. Swings, the Members of his secretariat, and you, the Members of the IAU, for having made it possible for us to be here.

Mr. President, Members of the Executive Committee, Ladies and Gentlemen, we shall be happy to become part of your family. Thus the Moroccan delegation states its wish to become a Member of the IAU.

Thank you."

Application from Peru

The President invited Dr. M.L. Aguilar, representative of Peru, to present an application for associate membership from Peru:

"Mr. President, Members of the Executive Committee of the International Astronomical Union, Astronomers of all countries, Ladies and Gentlemen,

I address you as Member of the National Committee of Astronomy and Astrophysics and, on behalf of Doctor Carlos del Rio, chairman of the National Council of Science and Technology, CONCYTEC, from Peru.

Mr. President, I wish to formally request the admission of my country, Peru, as an Associate Member of the International Astronomical Union.

The National Council of Science and Technology, CONCYTEC, is carrying out an important scientific, economic and social development under the highest human values and for this reason it has decided to support astronomical and astrophysical sciences. Peru is a country with an ancient culture which has earlier cultivated Astronomy and other sciences and arts. Our culture is now ready to meet the sciences of today.

The Visiting Lecturers' Programme is currently running at the Universidad Nacional Mayor de San Marcos since 1984. This University is the oldest in America and has an important position in the history of my country.

We are sure that the entry of Peru into the International Astronomical Union will be of great benefit not only to Astronomy in our country, but it will also provide many future opportunities for increased international collaboration in related sciences.

We are ready to join the international community and hope for your positive reaction.

Thanks."

Application from Saudi Arabia

The President invited Dr. Fadhil A.N. Mohammed, representative of Saudi Arabia, to present an application for full membership from Saudi Arabia.

"Mr. President, Members of the Executive Committee of the International Astronomical Union, Fellow Astronomers, Ladies and Gentlemen,

I am glad to address you on behalf of our President of King Abdulaziz City for Science and Technology (KACST), Riyadh, Saudi Arabia. This is the Government organization for promoting large-scale Astronomical Projects in the Kingdom along with other applied researches.

Regarding astronomical activities in Saudi Arabia, there are seven universities, out of which two universities have full-fledged Departments of Astronomy supported by their respective observatories. The other universities offer optional courses in Astronomy to the undergraduate students of Mathematics and Physics.

King Abdulaziz City for Science and Technology, which has membership of a large number of International Organizations in various fields, is actively engaged in preparing astronomical facilities in the Kingdom. It has carried out extensive site-testing surveys at different locations in our country. It came out that astronomical seeing is uniform over Saudi Arabia and the best sites are in the south-west region of the country. Hence a final site for a national observatory of the Kingdom has been selected which will contain reasonably large telescopes and other astronomical instruments such as meridian circle, radio telescopes, etc...

King Abdulaziz City for Science and Technology has established a few observatories, spread over the Kingdom, to sight the young crescent for Arabic months. A Landsat project for remote-sensing is already in operation and one of its two 10-meter antennas has been modified for VLBI observations. A contract has been signed with Australia to provide laser and lunar-ranging. The 75 cm laser-ranging telescope has been modified to have an additional Nasmyth focus for optical astronomy. KACST is also planning to enter into the project of GONG. There is a number of planetaria being built to promote astronomical awareness in schools and public media.

Mr. President, remembering the past contribution of Arab astronomers and rich cultural heritage in Astronomy, Saudi Arabia with its above-mentioned large-scale astronomical programmes has determined to go ahead side-by-side with other nations to promote the cause of Astronomy. Regular contacts with the IAU in General Assemblies at Montreal and New Delhi convinced us to approach the IAU for the membership of our Country. Hence, on behalf of the President of the King Abdulaziz City for Science and Technology, I am applying for its membership.

Mr. President, please accept our best wishes for the IAU in promoting international cooperation among its Member countries.

Thanking all of you and best regards."

The General Secretary informed the General Assembly that all 4 applications for full membership and both applications for associate membership had been carefully examined by the Executive Committee and had agreed that the criteria for membership of the status applied for had been met in each case. The General Secretary therefore moved that the General Assembly admit Algeria, Iceland, Morocco and Saudi Arabia as new adhering Countries of the Union and Malaysia and Peru as the first new adhering associate Countries. The motion was accepted unanimously.

20. Changes in Commissions

The General Secretary read the proposals of the Executive Committee:

Commission Presidents and Vice-Presidents

Commission	Presidents, Vice-President(s)
4 Ephemerides	K. Seidelmann (USA) B. Yallop (UK)
5 Documentation and Astronomical Data	G. Wilkins (UK) B. Hauck (Switzerland)
6 Astronomical Telegrams	E. Roemer (USA) J. Grindlay (USA)
7 Celestial Mechanics	J. Henrard (Belgium) A. Deprit (USA)
8 Positional Astronomy	M. Miyamoto (Japan) L.V. Morrison (UK)
9 Instruments and Techniques	J. Davis (Australia) J.C. Bhattacharrya (India)
10 Solar Activity	E.R. Priest (UK) V. Gaizauskas (Canada)
12 Radiation and Structure of the Solar Atmosphere	J.W. Harvey (USA) J.O. Stenflo (Switzerland)
14 Atomic and Molecular Data	S. Sahai-Brechot (France) W.L. Wiese (USA)
15 Physical Study of Comets, Minor Planets and Meteorites	J. Rahe (Germany, FR) A.W. Harris (USA)
16 Physical Study of Planets and Satellites	A. Brahic (France) M. Marov (USSR) & D. Morrison (USA)
19 Rotation of the Earth	M. Feissel (France) B. Kolaczek (Poland)
20 Positions and Motions of Minor Planets, Comets and Satellites	R. West (Germany, FR) A. Carusi (Italy)
21 Light of the Night Sky	A.-C. Levasseur-Regourd (France) M.S. Hanner (USA)
22 Meteors and Interplanetary Dust	C.S.L. Keay (Australia) J. Stohl (Czechoslovakia)
24 Photographic Astrometry	W.F. van Altena (USA) Ch. de Vegt (Germany, FR)

25	Stellar Photometry and Polarimetry	I.S. McLean (UK) A.T. Young (USA)
26	Double and Multiple Stars	H. McAlister (USA) H.A. Abt (USA)
27	Variable Stars	M. Breger (Austria) J. Percy (Canada)
28	Galaxies	G.A. Tammann (Switzerland) E.Ye Khachikian (USSR)
29	Stellar Spectra	P. Conti (USA) D.L. Lambert (USA)
30	Radial Velocities	D. Latham (USA) G. Burki (Switzerland)
31	Time	P. Pâquet (Belgium) E. Proverbio (Italy)
33	Structure and Dynamics of the Galactic System	M. Mayor (Switzerland) L. Blitz (USA)
34	Interstellar Matter	J.S. Mathis (USA) H. Habing (Netherlands)
35	Stellar Constitution	A. Maeder (Switzerland) P. Demarque (USA)
36	Theory of Stellar Atmospheres	D.F. Gray (Canada) W. Kalkofen (USA)
37	Star Clusters and Associations	G.L.H. Harris (Canada) C. Pilachowski (USA)
38	Exchange of Astronomers	F.G. Smith (UK) J. Sahade (Argentina)
40	Radio Astronomy	P. Mezger (Germany, FR) M. Morimoto (Japan)
41	History of Astronomy	J.D. North (Netherlands) S. Débarbat (France)
42	Close Binary Stars	R.H. Koch (USA) Y. Kondo (USA)
44	Astronomy from Space	E. Jenkins (USA) J. Trümper (Germany, FR)
45	Stellar Classification	M. Golay (Switzerland) D. MacConnell (USA)
46	Teaching of Astronomy	A. Sandqvist (Sweden) L. Gougenheim (France)
47	Cosmology	K. Sato (Japan) R.B. Partridge (USA)
48	High Energy Astrophysics	R.A. Sunyaev (USSR) J. Ostriker (USA)
49	The Interplanetary Plasma and the Heliosphere	L.F. Burlaga (USA) B. Buti (India)
50	Protection of Existing and Potential Observatory Sites	D.L. Crawford (USA) P.D. Murdin (UK)
51	Bioastronomy: Search for Extraterrestrial Life	G. Marx (Hungary) R. Brown (Australia)
	Working Group for Planetary System Nomenclature	H. Masursky (USA)

This proposal was received by acclamation by the General Assembly.

Organising Committees of Commissions

The General Secretary informed that, in order to save time, it had been decided not to present the lists of Members in Organising Committees of Commissions, but that the lists were available at the IAU Secretariat for inspection. They will be printed in Transactions XXB, Chapter VII.

21. IAU Representatives to other Organisations

	<u>Organisation</u>	<u>Representative 1988-1991</u>
ICSU	International Council of Scientific Unions General Committee	D. McNally
BIPM/CCDS	Bureau International des Poids & Mesures Working Group on the Temps Atomique International of the Consultative Committee for the Definition of the Second	G. Winkler
CCIR	International Radio Consultative Committee Study Group 2 Study Group 7	J. Whiteoak A.R. Thompson S. Leschiutta
CIE	Compagnie Internationale de l'Eclairage	D. Crawford
CODATA	Committee for Data for Science & Technology	G. Westerhout
COSPAR	Committee on Space Research COSPAR ISC B COSPAR ISC D COSPAR ISC E COSPAR Sub. Committee E1 COSPAR Sub. Committee E2	D. McNally J. Rahe S. Grzedzielski Y. Kondo R. Sunyaev M. Pick
COSTED	Committee on Science & Technology in Developing Countries	D. McNally
CTS	Committee on the Teaching of Science	L. Gouguenheim
EPS	European Physical Society Conference Committee	J. Bergeron
FAGS	Federation of Astronomical & Geophysical Services	E. Tandberg-Hanssen
IAF	International Astronautical Federation	Y. Kondo
IERS	International Earth Rotation Service	Ya. Yatskiy
ISY	International Space Year	L. Gouguenheim
IUCAF	Inter-Union Commission on Frequency Allocation for Radio Astronomy & Space Science	B.A. Doubinsky N. Kaifu V.L. Pankonin G. Swarup

IUPAP	International Union of Pure & Applied Physics	V. Trimble
IUWDS	International Ursigram & World Day Service	H. Coffey
QBSA	Quarterly Bulletin on Solar Activity	E. Hiei
SCOPE	Scientific Committee on Problems of Environment	R. Cayrel
SCOSTEP	Scientific Committee on Solar-Terrestrial Physics	S.T. Wu
URSI	Union Radio-Scientifique Internationale	J. Baldwin

22. Place and Date of the XXst General Assembly.

The President called upon Dr. R. Mendez to present the invitation of Argentina for the 21st General Assembly to be held in Buenos Aires. He reported that the work has already begun in Argentina. The Ministry of Education has declared the XXist General Assembly as a project of national interest. They have also received the support of the National Research Council and of the University of La Plata. The Local Organizing Committee, composed of 12 persons, has been established. The National Organizing Committee will take major decisions before the end of the year.

The General Assembly accepted this invitation with acclamation and the President asked Prof. R. Mendez to convey the acceptance and the gratitude of the Union to the Ministry of Education of Argentina.

The proposed dates for the XXist General Assembly are 23rd July-2nd August 1991, in order to allow astronomers involved in the observation of the total eclipse of the Sun on July 11, 1991, to attend.

23. Election to the Union of a President, a President-Elect, six Vice-Presidents, a General Secretary, and an Assistant General Secretary

The General Assembly approved by acclamation the proposal of the President that Prof. Y. Kozai be elected the new President of the Union, for the term 1989-1991.

The General Assembly also approved by acclamation the proposal that Prof. Acad. A.A. Boyarchuk be elected the President-Elect of the Union for the term 1989-1991.

The President then moved that Profs. V. Radhakrishnan, Dr. M.S. Roberts, Dr. Ye Shu-Hua be elected Vice-Presidents for the term 1989-1991. This motion was approved by acclamation.

The President finally proposed that Dr. D. McNally be elected General Secretary of the Union, and Dr. J. Bergeron Assistant General Secretary of the Union, for the term 1988-1991. This proposal was approved by acclamation.

The President then invited Prof. Y. Kozai, Prof. V. Radhakrishnan, Dr. M.S. Roberts, Dr. Ye Shu Hua and Dr. J. Bergeron to join the Executive Committee on the platform.

Following these elections, the IAU Executive Committee for the period 1988-1991 will thus be as follows:

EXECUTIVE COMMITTEE

1989-1991

President:

Prof. Y. Kozai

National Astronomical Observatory, Mitaka,
Tokyo 181, Japan
Telephone: 422-41-3650
Telex: 02822307 TAOMTK

General Secretary:

Dr. D. McNally

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Telex: 28722 UCPHYS G
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Assistant General Secretary:

Dr. J. Bergeron

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F-75014 Paris, France
Telephone: (33-1) 43 20 14 25
Telex: 205671 IAU F
Fax: (33-1) 40 51 21 00

Vice-Presidents:

Dr. A.H. Batten

Herzberg Institute of Astrophysics, Dominion Astrophysical
Observatory, 5071 West Saanich Road,
Victoria BC, V8X 4M6, Canada

Prof. R. Kippenhahn

Max-Planck-Institut für Physik & Astrophysik,
Karl-Schwarzschild-Strasse 1, D-8046 Garching bei
München, Germany, FR

Prof. P.O. Lindblad

Stockholm Observatory, S6133 00 Saltsjöbaden, Sweden

Prof. V. Radhakrishnan

Raman Research Institute, Sadashivanagar,
Bangalore 560 080, India

Dr. M.S. Roberts

NRAO, Edgemont Road, Charlottesville VA 22903, USA

Dr. Ye Shu Hua

Shangai Observatory, Shangai, China, PR

President-Elect:

Dr. A.A. Boyarchuk

Astronomical Council, USSR Academy of Sciences,
Pyatnitskaya Ul. 48, 109017 Moscow, USSR

Advisers:

Prof. J. Sahade

C.C. No. 677, Observatorio Astronomico, Universidad
Nacional de La Plata, 1900 La Plata (Bs. As.), Argentina

Dr. J.-P. Swings

Institut d'Astrophysique, 5, avenue de Cointe,
B-4200 Cointe-Ougrée, Belgium

24. Address by the President 1985-1988

Prof. Sahade spoke as follows:

"My Dear Colleagues and Friends,

Now it is time to listen to the President of the Union for the triennium 1988-1991, who you have just elected by acclamation. But before, let me say a few final words.

In the first place, I would say that I have felt very honored and privileged with my term as President of the IAU and that I have enjoyed my task tremendously. I have been kept very busy but happy.

I have tried to devote as much time as possible to the Union and I have been rewarded with the pleasure of meeting many colleagues in a number of countries and, in some cases, of helping them acquire a new interest in our organization and in the development of Astronomy. In every circumstance, the contacts have been most useful for the two sides, I believe.

Three years is a very short time to analyze deliberately all the changes that may be needed in an Union such as ours. During the past term we proposed, as you know, a couple of modifications to the structure of the IAU that were endorsed by the Executive Committee and adopted at the Extraordinary General Assembly held on August 2nd.

I am convinced that other changes may still be necessary, particularly in regard to the role of the President and perhaps that of the Officers. I did not feel like bringing them up during my term, for obvious reasons, but I am mentioning this here to make it easier for my successors to start a discussion if they should feel the same way as I do.

My three years in office have given me the wonderful experience of dealing with an earnest, friendly and cooperative Executive Committee, and I think we should be very grateful to its membership for the way they have served the Union. In particular, our thanks should go to the retiring Vice-Presidents Bob Kraft, Manuel Peimbert and Yaroslav Yatskiv, and to the retiring Advisers, Robert Hanbury Brown and Richard West, whose calm and experienced opinions were always so valuable and so welcome.

The General Secretaries actually deserve a special paragraph, truly special thanks, because I think that, from now on, when we wish to give an example of real team work we should bring up the example of Jean-Pierre and Derek who have worked very hard, have offered all they could to our Union and have made it naturally possible for the Officers to work as really one single person. With Jean-Pierre I have constantly and pleasantly been in touch by mail, by telex or by telephone, and I think the symbiosis between the two of us he talked about in Delhi, did materialize very nicely and very effectively for the benefit of the affairs of the Union. I will certainly miss the continuous, friendly and warm exchange of views and reflections, and certainly hope that the strong ties of friendship that did develop between Jean-Pierre, Derek and myself will continue throughout the years.

The Secretariat in Paris, now in the very able hands of Monique Orine, the very dynamic administrative assistant, and her very efficient helper, Huguette Gigan, the part-time bilingual Secretary, has been a great help whenever needed and they have also responded efficiently to my requests and to my many messages by telex. Many, many thanks. I should also thank Denise Fraipont, Jean-Pierre's Secretary, and Valerie Peerless, Derek's Secretary, who were always ready to show their goodwill and their eagerness to help.

If you permit me, I would like to place on record my great indebtedness to my Secretary, Viviana Soler, who served the Union with loyalty, hard work and warm enthusiasm. When she accepted the job, I am sure she did not expect to have to work so hard, and she did it with an ever present nice smile and the best of goodwill. My task would have been very difficult without her assistance, and I feel indeed most grateful to Viviana.

Last but not least, I should point out that my work as President of the Union was encouraged by the support received spontaneously from the University of La Plata, Argentina. The University provided me with a fully equipped house for office, telex and telephone services and took care of the salary for Viviana Soler. Thanks to Rector Pesack, grants were assigned by the Secretary of Science and Technology, by CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas) and by the University of La Plata. Thanks to Rector Plastino, a grant was assigned to us by the Research Commission of the Province of Buenos Aires. Continuous support also from the Faculty of Astronomical Sciences of the La Plata University through Dean Mondinalli, and from the Argentine Institute of Radioastronomy, through Director Colomb, is gratefully acknowledged. All such help, in infrastructure and in funds, made it possible for me to carry my duties as President without charging the Union for our operational expenses.

Although the local organizers will be thanked very warmly in a few minutes, I cannot refrain from expressing once again my admiration of the work of the National Organizing Committee and the Local Organizing Committee who have done a really wonderful, careful and perfect job. Congratulations and warm thanks! I am particularly happy that I have ended my Presidency with such magnificently organized General Assembly! Last night's Closing Banquet really deserves a separate paragraph, but it has been so wonderfully done that it is hard for me to find the right words to praise it!

Finally, thanks to all of you for honoring me with the opportunity of serving the Union and for making this General Assembly a very successful one.

Now, I have the privilege of turning the floor over to my successor, for 1988-1991, Professor Yoshihide Kozai."

25. **Address by the President 1988-1991**

Prof. Y. Kozai addressed the General Assembly as follows:

"Professor Sahade, Distinguished Guests, Ladies and Gentlemen,

It is indeed a great honor for me to be nominated and to serve as the President of the International Astronomical Union.

Many years ago when I was young only two or three delegates could attend the General Assembly from my country and after they came back home they reported to us on the activities of the General Assembly, which was recognized as the most important astronomy meeting. In fact there were only a few meetings in those days. By having heard such reports I dreamed that someday I could become a Member of the Union and attend a General Assembly; however, at that time I did not think it would be possible for me because of our financial situation. Still, very fortunately, I was admitted as a Member of the Union in 1961 and could attend the General Assembly at Berkeley as I was then working in the United States.

As an astronomer who was educated and trained in an isolated country in the Far East I have appreciated the importance of international cooperation and meetings and even visiting astronomers abroad. I still remember how I was excited when I could see many eminent astronomers, whom I had known only by name, i.e. by reading textbooks and scientific journals. After having had such experiences, I have had an idea that only after I could see authors I could understand correctly what they wanted to say in their papers.

Since then the world has been changed for everybody. Now several astronomers complain that there are too many meetings of interest other than General Assemblies, whereas also I know many people who desired to attend the General Assembly at least, but could not find enough funds to do so. In fact we must recognize that the IAU is a Union with many astronomers under very different conditions.

I am afraid that a more difficult problem is now facing many astronomers at their home institutes. In fact in almost every country we have faced financial difficulties, namely budget cuts, staff cuts and so on, and even some observatories are under threat of partial or complete closure. Moreover, for many observatories environmental problems have become serious because of artificial lighting and radio noise. Indeed we have many problems to solve in front of us.

Therefore, I feel that I am nominated as the President of the Union at a very severe time for astronomers and the IAU. In spite of many difficulties I believe that there are very many exciting problems we desire to understand in the world of astronomy, some of them were discussed during this General Assembly. Therefore, I am sure that despite such difficulties, astronomical researches will be developed rapidly in coming years.

In the coming three years as the President I will make every effort to cooperate with you and to try to make the Union and the General Assembly more attractive, particularly for young astronomers. To do this I would appreciate having your advice and suggestions, particularly, from the outgoing President, Professor Sahade, and the General Secretary, Dr. Swings, who have contributed very much to promote the activities of the IAU and to develop astronomy in the past years. I would like also to thank all the Members of the IAU and of the Executive Committee who have made every effort in the organization of the IAU.

Meantime, I will try to improve my accent.

Thank you"

26. Closing Ceremonies

The President proposed a vote of thanks to all the organizers, who so efficiently contributed to the great success of the XXth General Assembly, on behalf of all participants.

Address by Dr. G. Cayrel de Strobel, on behalf of the participants

"President Sahade, Professor Drake, Professors Davidsen and Giacconi, all Members of the National US Organising and Local Organising Committees and of the Executive Committee of the IAU, dear Friends and Colleagues,

I have the great honor to have been chosen for expressing our gratitude and admiration for the perfect organisation of the XXth General Assembly of the IAU.

Both the Science and the material organisation have been outstanding.

In spite of the absence of results from the Space Telescope everyone of us has felt in Baltimore the spirit of the Space Institute and I felt myself for this, a real difference between this General Assembly and the 12 former General Assemblies I have attended in my long astronomical career.

Each of us was feeling, here in Baltimore that soon something extraordinary will happen in Astronomy and was preparing himself for this event.

Is it not great also, that to compensate for the absence of real Space Telescope observations the obscure star Sanduleak -69°202 turned into a Supernova and that Comet Halley just appeared to be observed for the first time from space, to supply alternate scientific highlights for this General Assembly?

We enjoyed everything from humble single Commission meetings to the "Rise and Fall of Quasars".

We are returning back to our countries, the head full of new things and happy to have discovered the charms of a superbly renovated Baltimore.

A further return of IAU General Assemblies is the periodic encounters with so many old friends, that we meet unfortunately only every three years.

At the Rome General Assembly in 1952 I was proud to be thanked for my services as local hostess and now, on the other side of the gate, I am proud to be able to thank, on behalf of my colleagues, the IAU Executives and Secretariat, all the Local Organizers and the US National Organising Committee who did so much for the success of the General Assembly.

Thank you."

**Address by Mrs. A.H. Batten
on behalf of the Guest Participants**

"Mr. President, Members of the IAU and other Ladies and Gentlemen,

On behalf of the guests who have accompanied IAU members to Baltimore, I would like to express our appreciation to the many people involved, as official organisers or as volunteers, in making our days here full of interest.

From the planning of group tours, to the answering of unforeseen and awkward questions, your thoughtful and enthusiastic hospitality was always apparent; and the trajectory of world-wide understanding has been made more firm and beautiful, as we met old friends and made new ones, in gardens, museums, markets, boats and buses.

Nous, les accompagnateurs inscrits, qui venons de pays différents et parlons des langues diverses, tenons à remercier le Comité Local d'Organisation et les Volontaires de nous avoir donné l'occasion de connaître divers aspects de la vie à Baltimore et dans ses environs.

A vous, nos amis, merci beaucoup.

Au revoir."

Address by the retiring General Secretary, Dr. J.-P. Swings

"Ladies and Gentlemen,

La plupart des remerciements que je tiens à formuler ont, en fait, été exprimés lors de la première session de l'Assemblée Générale : je me contenterai de les reprendre ici très brièvement.

Since most of my acknowledgements were delivered at the first session of the General Assembly, let me simply summarize them here, without repeating any name, but by outlining the following:

- the excellent team work I enjoyed with the other two Officers, as well as the very positive support from the members of the Executive Committee;
- the outstanding secretarial help I had in Paris and in Liège;
- the beautiful collaboration in which I was involved with the Local Organizing Committee in the preparation of this General Assembly;
- the financial support I received from the Ministry of Education in my country.

What happened between August 2nd and today concerns some of the topics I had mentioned in my report at the first session of the General Assembly. I will take a few items, one by one:

- the help I received in the organization of this General Assembly: I let you judge the result. The only thing I can say is that I heard very few complaints... so I take that as a positive judgement... and as a nice reward, for the Local Organizing Committee as well as for the IAU;
- the contacts with the press: I believe they have been numerous and fruitful. Talking about the press, the very local one this time, I was really impressed by the excellence of IAU Today. Here again, the collaboration between the newspaper staff and the IAU was very good, and I did appreciate it a lot. I said I would not mention names, so I won't, but I wish to thank all those who contributed so well to the success of IAU Today;
- the involvement of the IAU in the series of TV broadcasts on the observatories around the world: you just saw an un-edited preview of an excerpt. I think we can look forward to a beautiful result in the end that will contribute to the popularization of our science;
- the anti-pollution activities: they have been numerous, from press conferences to contributions at meetings, and they will continue in two days with IAU Colloquium 112 in Washington;
- the entry of new countries: four full members and two associate members were welcomed in the Union a few minutes ago: this is of course the result of contacts, sometimes personal, sometimes through colleagues knowing particular situations that, in some cases, started before "my" triennium, and I thank those individuals for their collaboration;
- the promotion and development of astronomy, and the cooperation between amateur and professional astronomers: two Working Groups have been created to that effect.

These are all past events; let me say a few words about the future, and in particular to my successor Derek McNally. As you know, Derek, in the secretariat in Paris, we used the phone, telex and telefax quite extensively; in the new offices where you will be going, you will have the opportunity to use new links toward the astronomical community, e.g. via electronic mail (I just hope you don't get swamped with too many messages !). In a moment I will give you two items; but before I do so, I cannot resist using the sentence from Erasmus Darwin you brought to my attention a few months ago. It reads "A fool... is a man who never tried an experiment in his life".

Well, I believe being an IAU General Secretary, and organizing a General Assembly is some sort of an experiment (a rewarding one even)... so, maybe, I can now feel relieved. Anyhow, as Maarten Schmidt kindly pointed out while showing slides of the cloverleaf quasar the other night, a General Secretary can still participate in some scientific research (I suppose this implies that he has a few graduate students or postdocs or collaborators doing the work, but never mind), and I sincerely hope, Derek, that you will also be able to continue doing some research as well. In any case, the task you accepted is a challenge, and it does have rewards. Now let me end by transferring to you two symbols of our Union:

- the IAU paper knife^(*) that dates back to Donald Sadler, when he was IAU General Secretary (1958-1964);
- the keys of the present secretariat in Paris, and I do this while wishing you and the new Executive Committee the best of luck for the coming triennium.

Bonne chance, et meilleurs vœux de succès à la nouvelle équipe à la tête de l'UAI."

Address by the newly elected General Secretary, Dr. D. McNally

"Monsieur le Président, Membres de l'Union, Mesdames et Messieurs,

Vous m'avez fait l'honneur de m'élire aujourd'hui Secrétaire Général de l'UAI. Je me ferai un plaisir de servir et l'Union et l'Astronomie. Ce sera l'occasion pour moi de m'acquitter partiellement de la dette que j'ai envers une science qui m'a tant donné.

J'espère avoir le plaisir de rencontrer beaucoup d'entre vous au cours de ces trois prochaines années ou, du moins, avoir l'occasion d'être en relation avec le plus grand nombre.

Encore une fois, je vous remercie de votre confiance.

Mr. President, Members of the Union, Ladies and Gentlemen,

In 1979, the Union elected as General Secretary, an Englishman from Ireland. That proved a most felicitous choice. Today you have done me the honour of electing me as General Secretary -an Irishman from England. I hope that this election will prove less asymmetrical than my favourite definition of a Ski Resort, namely, a place where daughters seek husbands and husbands seek daughters. I look forward to this opportunity to serve the Union and the science of Astronomy. It will be an opportunity to discharge some part of the debt that I owe to a science which has given me so much. I also look forward to seeing as many of you as I can in the next three years or at the very least, to being in communication.

Thank you for your confidence."

(*) Unfortunately, this item was stolen from the General Secretary's office the night before the second session of the XXth General Assembly!