

**Resolutions Proposed by Commissions****Resolution C1 : Astronomical Constants**

Commissions 4, 7, 8, 19 and 31

- recognizing the importance of ensuring that the IAU system of astronomical constants is rigorously defined and is well suited to current applications,
- invites the Presidents of IAU Commissions 4, 7, 8, 19 and 31 to form a Working Group to serve in collaboration with the appropriate special study group of the International Association of Geodesy which will
- 1) review current determinations of astronomical and geodetic constants,
  - 2) provide for informational purposes the current, best estimates of the values, accuracies and sources of these constants,
  - 3) propose appropriate changes in the relevant definitions and values of the constants of the IAU system,
  - 4) urge all authors to specify completely the values and accuracies, as well as the sources, of the constants used in their work, and
  - 5) submit a preliminary report in 1987.

**Résolution C1 : Constantes Astronomiques**

Les Commissions 4, 7, 8, 19 et 31

- reconnaissant l'importance de garantir que le système de constantes astronomiques de l'UAI est défini rigoureusement et qu'il est bien adapté aux applications courantes,
- invite les Présidents des commissions 4, 7, 8, 19 et 31 de l'UAI à former un Groupe de Travail qui devra, en collaboration avec le groupe spécial d'études approprié de l'Association Internationale de Géodésie,
- 1) passer en revue les déterminations des constantes astronomiques et géodésiques,
  - 2) fournir dans un but d'information les meilleures estimations de ces constantes ayant cours : valeur, précision et source,
  - 3) proposer des changements appropriés dans la définition et les valeurs des constantes du système de l'UAI,
  - 4) inciter tous les auteurs à spécifier complètement la valeur, la précision et la source des constantes utilisées dans leur travail, et
  - 5) soumettre un rapport préliminaire en 1987.

**Resolution C2 : Reference Systems**

Commissions 4, 7, 8, 19, 20, 24, 31, and 33

- recognizing
- 1) the existence of inconsistent reference systems based upon different theories and modes of observations,
  - 2) the significant improvement in the accuracy of observations using new techniques, and
  - 3) the importance of a space-fixed reference system, independent of the mode of observation, for use in astronomy and geodesy and satisfying the requirements of relativistic theories,

invites the Presidents of interested IAU Commissions (for example, 4, 7, 8, 19, 20, 24, 31, 33 and 40) to form an IAU Working Group, with appropriate sub-groups devoted to specialized topics, under the overall chairmanship of the Chairman of the Joint Discussion on Reference Frames, which will report to the XXth General Assembly in 1988 with recommendations for

- 1) the definition of the Conventional Terrestrial and Conventional Celestial Reference Systems,
- 2) ways of specifying practical realizations of these systems,
- 3) methods of determining the relationships between these realizations, and
- 4) a revision of the definitions of dynamical and atomic time to ensure their consistency with appropriate relativistic theories, and

invites the President of the International Association of Geodesy to appoint a representative to the Working Group for appropriate coordination on matters relevant to Geodesy.

**Résolution C2 : Systèmes de Référence**

Les Commissions 4, 7, 8, 19, 20, 24, 31 et 33

- reconnaisant
- 1) l'existence de systèmes de référence non cohérents les uns avec les autres, fondés sur des théories et des modes d'observation différents,
  - 2) l'amélioration significative de l'exactitude des observations par les nouvelles techniques, et
  - 3) l'importance de disposer pour l'astronomie et la géodésie d'un système de référence fixe dans l'espace indépendant du mode d'observation et répondant aux exigences des théories relativistes,

invite les Présidents des Commissions de l'UAI concernées (par exemple 4, 7, 8, 19, 20, 24, 31, 33 et 40) à former un Groupe de Travail de l'UAI comprenant des sous-groupes chargés d'aspects particuliers, sous la responsabilité générale du Président de la Discussion Conjointe sur les Systèmes de Référence ; ce Groupe de Travail préparera pour la XXème Assemblée Générale de 1988 des recommandations pour

- 1) la définition des Systèmes de Référence Conventionnels Terrestre et Céleste,
- 2) les façons de spécifier les réalisations pratiques de ces systèmes,
- 3) les méthodes pour déterminer les relations entre ces réalisations, et
- 4) une révision des définitions du temps dynamique et du temps atomique qui garantissent leur cohérence dans le cadre des théories relativistes appropriées, et

invite le Président de l'Association Internationale de Géodésie à désigner un représentant à ce Groupe de Travail afin d'exercer la coordination nécessaire en ce qui concerne les problèmes intéressant la géodésie.

### **Resolution C3 : Astronomical Designations**

Commission 5, with a view to avoiding confusion,

recommends strongly that IAU resolutions which concern the designation of astronomical objects outside the solar system be forwarded to the Working Group of Commission 5 on Designations for its advice before being passed on to the General Assembly.

Furthermore, Commission 5,

recognizing the many benefits that would follow from the clear and unambiguous identification of all astronomical objects to which reference is made in astronomical journals and other sources of data,

- strongly urges
- 1) that all astronomers follow the IAU recommendations on the designation of objects outside the solar system that were adopted by Commission 5 in 1979 (IAU Transactions XVIIIB, pp. 87-88) and the supplementary precepts that are given below in the Memorandum on Designations adopted in 1985,
  - 2) that the editors of astronomical journals draw the attention of authors to these recommendations, preferably by providing a summary, and request referees to refer back any papers or tabulations that do not provide satisfactory designations, and
  - 3) that the Space Telescope Science Institute adopt these recommendations for objects discovered with the Space Telescope.

Memorandum on Designations - New Delhi 1985

- 1) The IAU Style Book, 1986 Revision, will provide rules on designations to be used for constellations, stars and other astronomical objects.
- 2) Astronomers should consult "The First Dictionary of the Nomenclature of Celestial Objects" by Fernandez, Lortet and Spite and its supplement (1983 A. & A. Suppl. 52, No. 4, and *ibid* 1986 in press) for the designations of various types of astronomical objects already in the literature and to avoid duplication when proposing designations of new objects.
- 3) The following precepts are now added :
  - (i) The IAU approved three-letter abbreviations for the constellations together with LMC and SMC for the Magellanic Clouds should be used. These abbreviations should not occur with any other meanings.
  - (ii) Abbreviation of abbreviations (e.g. 'N' for 'NGC') should never be used.
  - (iii) Personal names such as 'Gum Nebula' should be preserved as in the First Dictionary.
  - (iv) New acronyms for abbreviating catalogues, types of objects, authors' names, observatories, etc. should have at least two letters.
  - (v) The list of types of objects (e.g. GCL, SNR, etc.) given in the First Dictionary should be followed closely.
  - (vi) Specific references are needed for acronyms that do not appear in the First Dictionary and for those that appear in the First Dictionary with classification E (explain) or Z (avoid) or those with S (systematic) which could be ambiguous, (e.g. OH).
  - (vii) For designations based on coordinates
    - use truncated coordinates, not rounded up ones ;
    - use explicit leading zeroes and the declination sign ;
    - use decimal points if appropriate ;
    - adopt the EINSTEIN extended format if possible (e.g. acronym HHMMSS <sup>±</sup> DDMSS or acronym HHMMSS.SS etc. <sup>±</sup> DDMSS.S etc.) ;
    - when necessary to distinguish old names based on Besselian 1950.0 coordinates from new names based on Julian 2000, precede the right ascension with a J in the latter case ;
    - adopt for galactic coordinates the prefix G (e.g. acronym GLLL.LL <sup>±</sup> BB.BB) ; and
    - if a coordinate designation includes the catalogue name, rather than the type of object, do not change the designation when the coordinates are improved.
  - (viii) The recommended form for designation of individual objects inside a larger object is (e.g. LARGE : Acronym Number).

- (ix) When objects are designated on finding charts, the coordinate equinox, the scale, and the N-S and E-W orientations should be indicated clearly.
- 4) Astronomers may obtain further advice, if necessary, from representatives of the Working Group of Commission 5 on Designations. The current (November 1985) representatives are :

<u>Name</u>	<u>Address</u>	<u>Tel./Tlx.</u>
C. Jaschek	Observatoire de Strasbourg 11, rue de l'Université F-67000 Strasbourg, France	88-35-43-00 890506 STAROBS F
J.M. Mead, or W.H. Warren, Jr.	Astronomical Data Center, Code 633 NASA Goddard Space Flight Center Greenbelt, MD 20771, USA	(301) 344-8310 89675 NASCOM GBLT
M.-C. Lortet	Obs. de Paris, Section de Meudon, DAPHE F-92195 Meudon Principal Cedex, France	(1) 45-34-75-70 201571 LAM F
H.R. Dickel	Astronomy Department University of Illinois 1011 West Springfield Avenue Urbana, IL 61801-3000, USA	(217) 333-5602 910-245-2434 AST

### **Résolution C3 : Désignations Astronomiques**

La Commission 5,

afin d'éviter toute confusion,

recommande fermement que les résolutions de l'UAI concernant la désignation d'objets astronomiques en dehors du système solaire soient transmises au Groupe de Travail de la Commission 5 sur les Désignations pour tenir compte de son avis avant d'être soumises à l'Assemblée Générale.

Par ailleurs, la Commission 5,

tenant compte des avantages nombreux qui découleraient d'une identification nette et sans ambiguïté de tout objet astronomique mentionné dans les journaux astronomiques et autres sources de données,

- invite instamment
- 1) tous les astronomes à suivre les recommandations de l'UAI sur la désignation d'objets en dehors du système solaire qui ont été adoptées par la Commission 5 en 1979 (Transactions UAI XVIIIB, pp. 87-88) ainsi que les préceptes supplémentaires contenus dans le Memorandum sur les Désignations (voir ci-dessous) adopté en 1985,
  - 2) les éditeurs de journaux astronomiques à attirer l'attention des auteurs sur ces recommandations en leur fournissant un résumé, et en demandant aux "referees" de refuser tout article ou table qui ne présente pas les désignations d'une façon satisfaisante, et
  - 3) le Space Telescope Science Institute à adopter ces recommandations pour les objets découverts par le Space Telescope.

Memorandum sur les Désignations - La Nouvelle Delhi 1985

- 1) Le Manuel de Rédaction, version 1986, indiquera les règles concernant les désignations à utiliser pour les constellations, les étoiles et autres objets astronomiques.
- 2) Les astronomes doivent consulter "The First Dictionary of the Nomenclature of Celestial Objects" par Fernandez, Lortet et Spite, ainsi que son supplément (1983 A. & A. Suppl. 52, No. 4, et *ibid* 1986 (sous presse)) pour se conformer aux désignations du "First Dictionary", dans le cas des objets astronomiques de types divers déjà mentionnés dans la littérature et aussi avant de proposer des désignations pour des objets nouveaux, ceci afin d'éviter la duplication.
- 3) Les préceptes suivants sont maintenant ajoutés :
  - (i) Les abréviations de constellations en trois lettres approuvées par l'UAI, ainsi que LMC et SMC pour les Nuages de Magellan, doivent être employées. Ces abréviations ne doivent jamais être employées avec d'autres significations.
  - (ii) Une abréviation ne doit jamais être abrégée elle-même (p. ex. "N" pour "NGC").
  - (iii) Les désignations contenant des noms propres, comme "Gum Nebula" doivent être préservées conformément au "First Dictionary".
  - (iv) Les acronymes nouveaux pour l'abréviation de catalogues, types d'objets, noms d'auteurs, observatoires, etc. doivent être composés d'au moins deux lettres.
  - (v) La liste des abréviations des types d'objets (p. ex. GCL, SNR, etc) donnée dans le First Dictionary doit être suivie de près.
  - (vi) Des références spécifiques sont requises pour les acronymes qui ne figurent pas dans le First Dictionary ainsi que pour ceux qui sont dans le First Dictionary avec la classification E (expliquer) ou Z (éviter) ainsi que ceux avec la classification S (systématique) quand ils pourraient être ambigus, p. ex. OH.
  - (vii) Pour les désignations basées sur les coordonnées :
    - utiliser les coordonnées tronquées au lieu des coordonnées arrondies ;
    - indiquer explicitement les zéros qui se trouvent en première position, ainsi que le signe de la déclinaison ;
    - mettre les points décimaux dans les cas appropriés ;
    - adopter si possible le format EINSTEIN  
(p. ex. acronyme HHMMSS<sup>+</sup> DDMMSS  
ou acronyme HHMMSS.SS etc.<sup>+</sup> DDMMSS.S etc.) ;
    - lorsqu'il y a lieu de faire une distinction entre les anciennes désignations basées sur les coordonnées de Bessel 1950.0 et les nouvelles désignations basées sur les coordonnées Juliennes 2000, faire précéder l'ascension droite d'un J dans ce dernier cas.
    - le préfixe G sera adopté pour les coordonnées galactiques  
(p. ex. acronyme GLLL.LL<sup>+</sup> BB.BB) ; et

- si une désignation basée sur les coordonnées comprend le nom d'un catalogue, plutôt que le type d'objet, la désignation ne doit pas être changée lorsque les coordonnées seront améliorées.
  - (viii) La forme recommandée pour la désignation d'objets à l'intérieur d'un objet plus grand est la suivante (LARGE : No. Acronyme).
  - (ix) Lorsque les objets sont désignés sur les cartes d'identification, l'équinoxe des coordonnées, l'échelle, et les orientations N-S et E-O doivent être clairement indiquées.
- 4) Les astronomes peuvent s'adresser aux représentants suivants du Groupe de Travail de la Commission 5 sur les Désignations pour tout autre renseignement ou conseil :

<u>Nom</u>	<u>Adresse</u>	<u>Tél./Tlx.</u>
C. Jaschek	Observatoire de Strasbourg 11, rue de l'Université F-67000 Strasbourg, France	88-35-43-00 890506 STAROBS F
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H.R. Dickel	Astronomy Department University of Illinois 1011 West Springfield Avenue Urbana, IL 61801-3000, USA	(217) 333-5602 910-245-2434 AST

### **Resolution C4 : Space Astrometry**

Commission 8,

- noting the resolution of IAU Symposium 114 (Leningrad, May 1985), and
- considering
- 1) that new technologies become most useful for astrometry when the observations are made from space, and
  - 2) that accuracies of  $10^{-4}$  to  $10^{-6}$  second of arc appear to be possible,
- requests appropriate agencies
- 1) to consider the importance of the scientific results obtainable by space astrometry,
  - 2) to develop advanced astrometric instruments, particularly interferometers operating in the optical, UV and IR domains, and
  - 3) to promote programs utilizing such instruments.

**Résolution C4 : Astrométrie Spatiale**

La Commission 8,

- notant la Résolution du Symposium 114 de l'UAI (Léningrad, mai 1985), et
- considérant 1) que les nouvelles technologies deviennent extrêmement utiles pour l'astrométrie quand les observations sont faites de l'espace, et
- 2) que des précisions de  $10^{-4}$  à  $10^{-6}$  seconde d'arc apparaissent possibles,
- demande aux agences compétentes
- 1) de considérer l'importance des résultats scientifiques qu'il est possible d'obtenir par l'astrométrie spatiale,
- 2) de développer des instruments astrométriques de pointe, en particulier des interféromètres opérant dans les domaines optiques, UV et IR, et
- 3) de promouvoir des programmes utilisant de tels instruments.

**Resolution C5 : Data Handling for Solar Research**

Commission 10,

- considering the large amount of solar information published in the Quarterly Bulletin of Solar Activity (QBSA), and the bulkiness and cost of disseminating hard copies of the data versus the increasing use of magnetic tape storage,
- recommends that judicious choices be made in order to reduce the use of hard copying and promote the use of magnetic tapes in data distribution for the QBSA.

**Résolution C5 : Distribution des Données de Recherche Solaire**

La Commission 10,

- considérant la quantité importante d'informations solaires publiées dans le "Quarterly Bulletin of Solar Activity" (QBSA), le volume et le coût financier de la distribution de copies et d'autre part l'utilisation croissante du stockage de données sur bandes magnétiques,
- recommande que des choix judicieux soient effectués de façon à diminuer l'utilisation des copies et de promouvoir l'utilisation de bandes magnétiques dans la distribution des données du QBSA.

**Resolution C6 : Carrington Reference System**

Commission 10,

- considering the importance of the Carrington reference system for statistical studies of solar phenomena from long time-series observations, and the importance of continuity between more than 100 years of past solar data and future

data of similar type, and the difficulty at the present time to improve significantly the determination of the position of the solar axis,

recommends that the Carrington reference system continue to be used generally.

#### **Résolution C6 : Système de Référence de Carrington**

La Commission 10,

considérant l'importance du système de référence de Carrington pour les études statistiques des phénomènes solaires basés sur de longues séries d'observations et l'importance de la continuité entre plus de 100 ans de données solaires passées et les données futures de type similaire,

recommande que le système de référence de Carrington continue à être utilisé en général.

#### **Resolution C7 : Adequate Network of Solar Observatories**

Commissions 10 and 12,

considering the importance of ground-based optical and radio solar observatories for obtaining data which are critical to our understanding of the Sun, which are complementary to solar space projects, and which have scientific importance beyond solar physics, and

that many ground-based solar observatories around the world are threatened by closure,

recommends that the appropriate organizations within the countries involved cooperate to ensure that an adequate network of observatories be maintained to study the Sun, taking account of the need for proper longitude coverage as well as the special contributions of some unique instruments.

#### **Résolution C7 : Réseau Adéquat d'Observatoires Solaires**

Les Commissions 10 et 12,

considérant l'importance des observatoires optiques et radio au sol pour l'obtention des données essentielles pour notre compréhension du Soleil, qui sont complémentaires des programmes spatiaux solaires et qui ont une portée scientifique qui dépasse la seule physique solaire, et

que de nombreux observatoires au sol répartis dans le monde sont menacés de fermeture,

recommandent que les organismes appropriés dans les pays concernés, coopèrent pour garantir qu'un réseau suffisant d'observatoires soit maintenu pour l'étude du soleil, en tenant compte d'une répartition adéquate en longitude ainsi que des contributions particulières de quelques instruments uniques.

**Resolution C8 : Working Group on Planetary Surveys**

Commission 16,

proposes the formation of a special Working Group on Planetary Surveys to coordinate ground-based and space-based observations of variable phenomena on the surfaces and in the atmospheres of the planets and satellites. These observations must be regular and are meant to serve in planning future space missions and to complement spacecraft encounter data. They will also contribute to the understanding of possible correlations of solar activity and planetary phenomena.

**Résolution C8 : Groupe de Travail sur des Etudes Planétaires Systématiques**

La Commission 16,

propose la formation d'un groupe de travail spécial consacré à des examens systématiques de planètes, afin de coordonner les observations, à partir du sol et de l'espace, de phénomènes variables sur les surfaces ou dans les atmosphères des planètes et des satellites. Ces observations doivent avoir lieu à intervalles réguliers, et sont destinées à planifier de futures missions spatiales ainsi qu'à servir de compléments à des données obtenues à partir de véhicules spatiaux atteignant des planètes. Elles contribueront également à la compréhension de corrélations possibles entre l'activité solaire et des phénomènes planétaires.

**Resolution C9 : Polarimetry and Large Telescopes**

Commissions 25 and 9,

considering that certain properties of astronomical objects are revealed best through measures of their polarized radiation, which is generally quite small, and

noting that relatively large telescopes are often needed to provide the necessary high signal-to-noise ratio,

recommends that, in achieving the compromises involved in the design of the very largest telescopes, due weight be given to the need to avoid instrumental polarization as far as possible.

Note : The more detailed proposal for resolution, submitted at the time of the General Assembly is in Commission 25 report on p. 207.

**Résolution C9 : Polarimétrie et Grands Télescopes**

Les Commissions 9 et 25,

considérant que certaines propriétés d'objets astronomiques sont mieux mises en évidence en mesurant la polarisation de leurs radiations, qui est en général faible, et

notant qu'il faut souvent utiliser des télescopes relativement grands pour obtenir le rapport signal sur bruit nécessaire,

recommandent que les compromis indispensables à l'élaboration des projets de très grands télescopes tiennent suffisamment compte de la nécessité d'éviter autant que possible la polarisation instrumentale.

Remarque : lorsqu'elle a été soumise, la formulation de cette résolution était plus détaillée et nuancée. Cette première version est publiée dans le rapport de la Commission 25 p. 207 du présent volume.

### Resolution C10 : Designation of Supernovae

Commission 28,

recognizing the need both for an immediate assignment of designations to supernovae as they are discovered, so that researchers can refer to them unambiguously, and for a permanent list of confirmed events for archival purposes,

recommends a) that the IAU Central Telegram Bureau, which has provided temporary designations since January 1985, continue to do so,

b) that the events in order of discovery be designated SN1985A, SN1985B,..., SN1985Z, and as required SN1985aa, SN1985ab,..., SN1985az, SN1985ba, SN1985bb,..., SN1985bz,..., SN1985za,..., SN1985zz, a system which provides essential continuity with that established many years ago by F. Zwicky, while permitting easy computer sorting, because the lower case letters will automatically follow the upper case ones, and

c) that the archival list continue to be maintained at the California Institute of Technology for the present.

### Résolution C10 : Affectation de Noms aux Supernovae

La Commission 28,

reconnaissant la double nécessité d'attribuer une désignation à des supernovae dès leur découverte, afin que les chercheurs puissent y référer d'une manière non ambiguë, et d'établir une liste actualisée d'événements confirmés pour des besoins d'archivage,

recommande a) que le Bureau Central des Télégrammes de l'IAU, qui a attribué des désignations temporaires depuis janvier 1985, poursuive cette activité,

b) que les événements, dans l'ordre chronologique de leurs découvertes soient appelés SN1985A, SN1985B,..., SN1985Z, si nécessaire, SN1985aa, SN1985ab,..., SN1985az, SN1985ba, SN1985bb,..., SN1985bz,..., SN1985za,..., SN1985zz, suivant un système qui procure une continuité avec celui établi, il y a de nombreuses années, par F. Zwicky, tout en permettant une classification informatisée, facilitée par la séquence des lettres utilisées,

c) que, dans un premier temps, la liste des archives continue d'être maintenue à jour au California Institute of Technology.

**Resolution C11 : Stellar and Solar Research at Mount Wilson**

Commissions 29, 36, and 12,

recognizing the continuing excellence of the facilities of the Mount Wilson Observatory for solar, stellar and interstellar research,

encourage efforts to ensure continuity of research at this observatory.

**Résolution C11 : Recherche Stellaire et Solaire au Mont Wilson**

Les Commissions 12, 29 et 36

reconnaisant que les installations de l'Observatoire du Mont Wilson continuent d'être d'une excellente qualité pour des recherches solaires, stellaires et interstellaires

encouragent les efforts qui permettront de poursuivre des recherches dans cet observatoire.

**Resolution C12 : Recommendations of Radio Source Nomenclature**

Commission 40, with the support of Commissions 5 and 48,

- considering
- 1) that the IAU adopted a new standard epoch designated J2000 that uses definitions of time and earth motion that are superior to former conventions,
  - 2) that the new standard epoch and astronomical constants adopted by the IAU have been used for astronomical ephemerides since January 1984, and
  - 3) that the increased use of computers for data handling, data archiving, and telescope control requires unambiguous easily readable formats for radio source names,

- recommends
- 1) that observers should use the approved catalogue designations with source names (1983 *A. & A. Suppl.* 52, No. 4 ; 1986 *ibid*, in press),

Other abbreviations should not be used. Since catalogue parameters such as epoch, wavelength, and naming convention are implied by the catalogue name, they will not have to be displayed explicitly. In naming new catalogues, the approved updated list of designations should be consulted to avoid duplication, and the new catalogue name should be registered promptly. If reference is made to a catalogue that has been listed, the appropriate literature citation should be given.

- 2) that the use of J2000 for source names based on equatorial coordinates start as soon as possible with the format

Catalogue name HHMMSS.SS etc. <sup>†</sup> DDMMSS.S etc.,

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The leading zeroes should be included. When fewer digits are needed, the coordinates should be truncated, not rounded. If more digits are required, they can be added to the decimal fraction of a second. Note that old catalogue names need not be changed, since the prefixed catalogue name implies the epoch. The source name is a convention, and is not necessarily a statement of an accurate position. However, when there is any possibility of confusion between designations based on B1950.0 and J2000, the prefix B or J should be used in front of the right ascension.

- 3) that if galactic coordinates are used, the name should be prefixed by G (without a space), and the digits should be truncated as in 2) with the format

Acronym GLLL.LL etc. † BB.BB etc.,

- 4) that pulsar designations should retain the format

PSR HHMMSS.SS etc. † DDMSS.S etc.

and J2000 should be used as soon as possible, in view of the astrometric precision needed for some pulsar-related problems,

- 5) that observers should include the epoch of observation in all catalogues and, when proper motion is important, the relevant supplementary publications concerning J2000 should be consulted, and
- 6) that observers should note that the relevant IAU resolutions concerning J2000 and the new astronomical constants are summarized in USNO Circular No. 183 with illustrative examples.

### Résolution C12 : Recommandations sur la Nomenclature des Radiosources

La Commission 40, avec le soutien des Commissions 5 et 48

- considérant
- 1) que l'UAI a adopté une nouvelle époque d'origine, dite J2000, qui utilise des définitions de temps et de mouvement terrestre qui sont supérieures aux conventions précédentes,
  - 2) que la nouvelle époque d'origine et les nouvelles constantes astronomiques adoptées par l'UAI ont servi à établir les éphémérides astronomiques depuis Janvier 1984, et
  - 3) que l'utilisation accrue d'ordinateurs pour le traitement de données, l'archivage des données, et la commande des télescopes demande une lecture des formats de nomenclature de radiosource qui soit à la fois facile et non-ambigüe,
- recommande
- 1) que les observateurs utilisent les désignations approuvées de catalogue avec noms de sources (1983, A. & A. Suppl. 52, No. 4 ; ibid, sous presse),

L'emploi d'autres abréviations est à proscrire. Il n'y a pas besoin de citer les paramètres du catalogue tels qu'époque, longueur d'onde, etc. puisque ceux-ci sont implicitement compris dans le nom du catalogue. Lors d'appellation de nouveaux catalogues, la liste

approuvée et mise à jour des désignations doit être consultée afin d'éviter toute duplication, et le nouveau nom du catalogue doit être enregistré sans délai. Une référence à la littérature doit être donnée en cas de mention de catalogue listé.

- 2) que l'emploi de la désignation J2000 pour les noms de sources basés sur les coordonnées équatoriales commence aussitôt que possible avec le format suivant :

Nom de catalogue HHMMSS.SS etc. † DDMSS.S etc.,

Tous les zéros, même en tête, doivent être inclus. Les coordonnées seront tronquées au lieu d'être arrondies si le nombre de chiffres doit être limité. Si davantage de chiffres sont nécessaires, ils seront ajoutés à la fraction de seconde. Noter qu'il n'y a pas besoin de changer les noms d'anciens catalogues, puisque l'époque est sous-entendue par le préfixe du nom du catalogue. Le nom de la source est une convention plutôt qu'une affirmation de position précise. Cependant, lors de possibilité de confusion entre les désignations B1950.0 et J2000, il faudrait ajouter le préfixe B ou J devant l'ascension droite,

- 3) que, dans le cas des coordonnées galactiques, on ajoute le préfixe G (sans espace) avant le nom, en tronquant les chiffres comme en 2) avec le format

Acronyme GLLL.LL etc. † BB.BB etc.,

- 4) que les désignations de pulsar gardent le format

PSR HHMMSS.SS etc. † DDMSS.S etc.

avec l'utilisation de J2000 aussitôt que possible en vue de la précision astrométrique requise pour certains problèmes ayant rapport aux pulsars,

- 5) que les observateurs indiquent l'époque des observations dans tous les catalogues et que, lorsque le mouvement propre est important, les publications supplémentaires appropriées concernant J2000 soient consultées, et
- 6) que les observateurs prennent note que les résolutions de l'UAI qui se rapportent à J2000 ainsi qu'aux nouvelles constantes astronomiques, se trouvent résumées dans la circulaire USNO No. 183 et avec des exemples à l'appui.

### **Resolution C13 : Faint Standard Star Studies**

Commission 45,

realizing the importance for all astronomy of obtaining a network of standard stars for spectral, photometric, radial velocity, and astrometric research, and

recognizing that the progress of our science continues to bring new knowledge by exploring to ever-fainter magnitude limits, and

- noting the increase in the number of large telescopes with efficient detectors both on the ground and in space,
- recommends that the necessary time on large telescopes be devoted to fundamental work of establishing a network of faint standard stars around the sky for situations in which it is not appropriate to use neutral-density filters.

### **Résolution C13 : Etude d'Étoiles Standard Faibles**

La Commission 45,

- prenant conscience de l'importance pour toute l'astronomie de disposer d'un réseau d'étoiles standard pour les recherches spectroscopiques, photométriques, de vitesses radiales, et astrométriques, et
- reconnaissant que le progrès de notre science continue d'apporter de nouvelles connaissances en explorant jusqu'aux limites de magnitudes les plus extrêmes, et
- remarquant que s'accroît, tant au sol que dans l'espace, le nombre de grands télescopes équipés de détecteurs sensibles et efficaces,
- recommande que soit accordé, sur les grands télescopes, le temps nécessaire au travail fondamental d'établir un réseau d'étoiles faibles dans tout le ciel pour tous les cas où il n'est pas possible d'utiliser des filtres neutres.

### **Resolution C14 : Future High-Energy Space Missions**

Commission 48,

- notes with approval the existing and planned studies of a number of space missions of great relevance to its work, specifically the Advanced X-ray Astronomy Facility, the X-ray Multimirror Facility and the Superconducting Magnet Facility on the Space Station. The Commission looks forward to the early construction of these facilities which can contribute significantly to international cooperation in high-energy astrophysics.

### **Résolution C14 : Futures missions spatiales en Astrophysique des Hautes Energies**

La Commission 48,

- note avec satisfaction les études en cours ou en projet de missions spatiales telles que l'"Advanced X-ray Astronomy Facility", le "X-ray Multi-mirror Facility", et le "Superconducting Magnet" sur la Station Spatiale. La Commission espère que ces missions, qui peuvent contribuer de façon importante à la coopération internationale en astrophysique des hautes énergies, seront réalisées à court terme.

### **16. Appointment of the Special Nominating Committee**

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 1985-1988. *These persons will be convened by the President of the IAU for the purpose of proposing names to the XXth General Assembly (1988) for the IAU Executive Committee membership (1988-1991).* The five persons appointed are :

V. Abalakin (USSR)  
K. Kodaira (Japan)  
G. Swarup (India)  
F. Pacini (Italy)  
B. Pagel (UK).

The appointment was unanimously confirmed by the General Assembly.

### **17. 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 around 935 new members to the Union. The names of the new members were displayed in a prominent place in the course of the General Assembly. The General Secretary informed that the names will be incorporated in the alphabetical list of IAU Members to appear in Transactions Vol. XIXB.

### **18. Application for IAU Membership**

The President invited Mr. Chidi E. Akujor, representative of Nigeria, to present an application for membership from Nigeria :

"Mr. President, Members of the Executive Committee of the International Astronomical Union, fellow astronomers, distinguished ladies and gentlemen, I address you on behalf of Professor Sam Okoye, Chairman of the Nigerian National Committee on Astronomy, and Secretary (Physical Sciences), Nigerian Academy of Sciences.

May I convey the greetings of the President and Fellows of our National Academy of Sciences on the occasion of the XIXth General Assembly of the International Astronomical Union, taking place in New Delhi, India.

Mr. President, I wish to formally request the admission of my dear country, Nigeria, as an adhering member of the International Astronomical Union.

The Nigerian Academy of Sciences, as an adhering member of ICSU as well as of a number of other scientific unions within the ICSU family, believes that the modern development of any nation, especially the developing countries, must be seen beyond the issue of solving social and economic problems. It is for this reason that our Academy has decided to provide auspices for the future development in Nigeria for Astronomy - a science that continues to remain at the esoteric level in many a developing country.

Mr. President, as you may recall, the 1978 International School for Young Astronomers co-sponsored by the IAU was hosted by Nigeria, and this triggered the teaching of Astronomy routinely as an optional subject for the physics degree in many Nigerian Universities. Now,

astronomy programmes at the level of BSc, and PhD are available in the University of Nigeria, Nsukka. To date one PhD and eight MScs have been trained, while three PhDs and three MScs are in the pipeline.

You may also recall that Nigeria has maintained regular presence at the IAU General Assemblies since 1976. Of recent, the IAU, through the General Secretary, Dr. Richard West, has been instrumental to the installation and commissioning of a 10-metre radio-telescope at Nsukka, which it is hoped will be useful in low frequency radio astronomy, especially in VLBI observations. We are indeed grateful.

It is our recognition of the importance of Astronomy as a science, as well as of these pioneering efforts, that the Nigerian Academy of Science hopes, in the truest tradition of science, that these international cooperative efforts and ventures in science involving Nigeria can be consolidated and expanded. We also believe that time has come for Nigeria to fully identify with the International Astronomical Union.

Once again, Mr. President, accept on behalf of the International Astronomical Union, the esteem and best wishes of the Nigerian Academy of Sciences."

The General Secretary informed the General Assembly that the application from Nigeria had been carefully examined by the Executive Committee and it was found that the degree of astronomical development in that country met the standards for IAU membership. The General Secretary therefore moved that the General Assembly admit Nigeria as a new Adhering Country. This motion was adopted unanimously.

### 19 Changes in Commissions

a) The General Secretary read the proposals of the Executive Committee for Commission Presidents and Vice Presidents for the period 1985-88

<b>Commission</b>	<b>Presidents, Vice-President(s)</b>
4 Ephemerides	<b>B. Morando</b> (France), K. Seidelman (USA)
5 Documentation and Astronomical Data	<b>G. Wilkins</b> (UK), B. Hauck (Switzerland)
6 Astronomical Telegrams	<b>A. Mrkos</b> (Czechoslovakia), E. Roemer (USA)
7 Celestial Mechanics	<b>V.A. Brumberg</b> (USSR), J. Henrard (Belgium)
8 Positional Astronomy	<b>Y. Requième</b> (France), M. Miyamoto (Japan)
9 Instruments and Techniques	<b>C.M. Humphries</b> (Australia), J. Davis (Australia)
10 Solar Activity	<b>M. Pick</b> (France), E.R. Priest (UK)
12 Radiation and Structure of the Solar Atmosphere	<b>M. Kuperus</b> (Netherlands), John W. Harvey (USA)
14 Atomic and Molecular Data	<b>R.W. Nicholls</b> (Canada), S. Sahal-Bréchet (France)

- |    |  |  |
|----|--|--|
| 15 | Physical Study of Comets,<br>Minor Planets and Meteorites        | <b>L. Kresak</b> (Czechoslovakia),<br><b>J. Rahe</b> (Germany, FR)                         |
| 16 | Physical Study of Planets and<br>Satellites                      | <b>G.E. Hunt</b> (UK),<br><b>A. Brahic</b> (France) and <b>D. Morrison</b> (USA)           |
| 19 | Rotation of the Earth  | <b>W. Klepczynski</b> (USA),<br><b>M. Feissel</b> (France) and <b>B. Kolaczek</b> (Poland) |
| 20 | Positions and Motions of Minor Planets,<br>Comets and Satellites | <b>Y. Kozai</b> (Japan),<br><b>J.V. Batrakov</b> (USSR)                                    |
| 21 | Light of the Night Sky   | <b>K. Mattila</b> (Finland),<br><b>A.-C. Levasseur-Regourd</b> (France)                    |
| 22 | Meteors and Interplanetary Dust                                  | <b>P.B. Babadzhанov</b> (USSR),<br><b>C.S.L. Keay</b> (Australia)                          |
| 24 | Photographic Astrometry  | <b>A. Uggren</b> (USA),<br><b>W.F. van Altena</b> (USA)                                    |
| 25 | Stellar Photometry and Polarimetry                               | <b>F. Rufener</b> (Switzerland),<br><b>I.S. McLean</b> (UK)                                |
| 26 | Double and Multiple Stars  | <b>K. Rakos</b> (Austria),<br><b>H. McAlister</b> (USA)                                    |
| 27 | Variable Stars   | <b>B. Szeidl</b> (Hungary),<br><b>M. Breger</b> (Austria)                                  |
| 28 | Galaxies   | <b>P. van der Kruit</b> (Netherlands),<br><b>G.A. Tammann</b> (Switzerland)                |
| 29 | Stellar Spectra  | <b>G. Cayrel de Strobel</b> (France),<br><b>P. Conti</b> (USA)                             |
| 30 | Radial Velocities  | <b>J. Andersen</b> (Denmark),<br><b>D. Latham</b> (USA)                                    |
| 31 | Time   | <b>D.D. McCarthy</b> (USA),<br><b>P. Pâquet</b> (Belgium)                                  |
| 33 | Structure and Dynamics of the<br>Galactic System                 | <b>W.B. Burton</b> (Netherlands),<br><b>M. Mayor</b> (Switzerland)                         |
| 34 | Interstellar Matter  | <b>J. Lequeux</b> (France),<br><b>J.S. Mathis</b> (USA)                                    |
| 35 | Stellar Constitution   | <b>D. Sugimoto</b> (Japan),<br><b>A. Maeder</b> (Switzerland)                              |
| 36 | Theory of Stellar Atmospheres                                    | <b>K. Kodaira</b> (Japan),<br><b>D.F. Gray</b> (Canada)                                    |
| 37 | Star Clusters and Associations                                   | <b>D.C. Heggie</b> (UK),<br><b>G.L.H. Harris</b> (Canada)                                  |
| 38 | Exchange of Astronomers  | <b>E. Müller</b> (Switzerland),<br><b>F.G. Smith</b> (UK)                                  |
| 40 | Radio Astronomy  | <b>J.E. Baldwin</b> (UK),<br><b>P. Mezger</b> (Germany, FR)                                |
| 41 | History of Astronomy   | <b>J.A. Eddy</b> (USA),<br><b>J.D. North</b> (Netherlands)                                 |

42	Close Binary Stars	J.I. Smak (Poland), R.H. Koch (USA)
44	Astronomy from Space	Y. Kondo (USA), K.A. Pounds (UK)
45	Stellar Classification	R.F. Garrison (Canada), M. Golay (Switzerland)
46	Teaching of Astronomy	C. Iwaniszewska (Poland), A. Sandqvist (Sweden)
47	Cosmology	G. Setti (Italy), K. Sato (Japan)
48	High Energy Astrophysics	C. Cesarsky (France), R.A. Sunyaev (USSR)
49	The Interplanetary Plasma and the Heliosphere	S. Grzedzielski (Poland), L.F. Burlaga (USA)
50	Protection of Existing and Potential Observatory Sites	S. van den Bergh Observatory (Canada), D.L. Crawford (USA)
51	Biastronomy : Search for Extraterrestrial Life	F.D. Drake (USA), G. Marx (Hungary)
	Working Group for Planetary System Nomenclature	H. Masursky (USA)

This proposal was received by acclamation by the General Assembly.

b) Organizing 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 Organizing Committees of Commissions, but that the lists were available at the IAU Secretariat for inspection. They will be printed in Transactions XIXB (see Chapter VI).

c) Change in Names of Commissions

The General Secretary informed the General Assembly that the Executive Committee had accepted the change of name of Commission 51 : "Search for Extraterrestrial Life" into "Biastronomy : Search for Extraterrestrial Life".

**20. Place and Date of the XXth General Assembly.**

The President called upon Prof. F.D. Drake, who presented an invitation from the National Academy of Sciences of the USA, to hold the XXth General Assembly of the IAU in Baltimore, USA, from August 2-11, 1988. The General Assembly accepted this invitation with acclamation and the President asked Prof. F.D. Drake to convey the acceptance and the gratitude of the Union to the President of the National Academy of Sciences of the United States.

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

The General Assembly approved by acclamation the proposal of the President that Prof. J. Sahade be elected the new President of the Union, for the term 1985-1988.

The President then moved that Profs. A. Batten, R. Kippenhahn and P.-O. Lindblad be elected Vice-Presidents for the term 1985-1991. This motion was also approved by acclamation.

The President finally proposed that Dr. J.-P. Swings be elected General Secretary of the Union, and Dr. D. McNally Assistant General Secretary of the Union, for the term 1985-1988. This proposal was also approved by acclamation.

The President then invited Prof. J. Sahade, Profs. Batten, Kippenhahn and Lindblad, and Dr. McNally to join the Executive Committee on the platform.

Following these elections, the IAU Executive Committee for the period 1985-1988 will thus be as follows :

**President :** Prof. J. Sahade  
Casilla de Correo 677  
Observatorio Astronomico  
Universidad Nacional de La Plata  
1900 La Plata (Bs. As.)  
Argentina  
Tel. : 54 (21) 249790  
Tlx. : 31151 BULAP AR

**General Secretary :**

Dr. J.-P. Swings  
IAU Secretariat  
61, avenue de l'Observatoire  
F-75014 Paris  
France  
Tel. : (33-1) 43 25 83 58  
Tlx. : 205671 IAU F

**Home Institute :**

Institut d'Astrophysique  
5, avenue de Cointe  
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Tel. : 41-52-99-80  
Tlx. : 41264 ASTRL B

**Assistant General Secretary :**

Dr. D. McNally  
University of London Observatory  
University College London  
Mill Hill Park  
London NW7 2QS, UK  
Tel. : 1-959-7367  
Tlx. : 28722 UCPhys G

(Colloquia, Symposia,  
Regional Meetings,  
Co-sponsorship)

**Vice-Presidents :**

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

Prof. R.P. Kraft  
Lick Observatory  
University of California  
Santa Cruz, CA 95064, USA

Prof. M. Peimbert  
Instituto de Astronomia  
Apdo. Postal 70264  
Mexico 04510 DF  
Mexico

Prof. R. Kippenhahn  
MPI für Physik & Astrophysik  
Karl-Schwarzschild-Strasse 1  
D-8046 Garching bei München  
Germany, FR

Prof. P.-O. Lindblad  
Stockholm Observatory  
S-133 00 Saltsjöbaden  
Sweden

Prof. Ya. S. Yatskiv  
Main Astronomical Institute  
Ukrainian Academy of Sciences  
SU-252127 Kiev  
USSR

**Advisers :**

Prof. R. Hanbury Brown  
School of Physics  
University of Sidney  
Sidney, NSW 2006  
Australia

Dr. R.M. West  
European Southern Observatory  
Karl-Schwarzschild-Strasse 2  
D-8046 Garching bei München  
Germany, FR

**22. Address by the President 1982-85**

Prof. Hanbury Brown spoke as follows :

"Before I ask you, next President to speak, I would like to say a few words of thanks to a few of the many people who have served our Union during the last few years. I will leave the pleasant task of thanking our hosts to a later speaker, but, even so, I must express the sincere thanks of this Union to the National Organizing Committee whose Chairman is Professor M.G.K. Menon and to the Local Organizing Committee, whose Chairman is Dr. A.P. Mitra, for all they have done to make this meeting a success.

First of all I thank all the members of the Executive for their careful work and for attending all the meetings. I particularly wish to express our thanks to the three retiring Vice-Presidents, Michael Feast, Lubor Kresak and Robert Wilson and to the retiring Adviser, Patrick Wayman. Let us assure them that we appreciate what they have done for the Union.

I am sure you would also like to join with me in thanking the Editors of Mandakini, Archie Roy and Mr. Ratnakar for their really excellent newspaper which has added significantly to the success of this meeting.

This brings me to the secretaries of the Union, the Assistant General Secretary, Jean-Pierre Swings, let me tell you, has handled his job with all the skill and tact which it demands. We can look forward to his term of office as General Secretary with complete confidence. We are also grateful to the Belgian Ministry of National Education for their help in his work for our Union.

We welcome Dr. Derek McNally as the next Assistant General Secretary.

Richard West, the General Secretary, told us in his speech at Patras when he was invited to be a Secretary of the IAU, he saw the invitation as an opportunity to contribute in a new way to the furthering of astronomy. I am sure you will all agree with me that he has made full use of that opportunity. With the help of the admirable services of Brigitte Manning and Danielle Lours in Paris, and of Elisabeth Völk in Munich, he has done more for this Union, and so for the furthering of international Astronomy, than we have any right to expect. Vainu Bappu told me that would be so and he was right. I would also like to thank the European Southern Observatory for their support.

Richard West is a man who values the purposes - the ideals - for which this Union was originally formed and for which it still exists, and he has been prepared to devote his considerable talent for administration, a great deal of his time and prodigious energy to serving those purposes. This Union has been blessed with a series of remarkably able and industrious General Secretaries - Richard West has sustained that tradition with distinction. Please join me in thanking him."

### **23. Address by the President 1985-1988**

Prof. J. Sahade addressed the General Assembly as follows :

"Professor Hanbury Brown, members of the Union, Ladies and Gentlemen, mes chers collègues,

Habituellement, afin de rassurer l'audience que les langues officielles de l'Union Astronomique Internationale sont deux, l'anglais et le français, le Président qui vient d'être élu s'adresse à l'Assemblée Générale en utilisant chaque langue alternativement pour les différents paragraphes de son allocution.

J'ai trouvé très difficile de faire cela de façon équitable et efficace, et, en conséquence, j'ai préféré utiliser aujourd'hui une seule des deux langues, celle qui est la plus proche de la tradition du pays amphitryon.

Alors, avec votre permission, je m'adresserai à vous en anglais.

Mais avant de commencer, je voudrais rendre hommage à la mémoire de mon très cher ami Vainu Bappu qui a été avec nous en esprit pendant toute cette Assemblée Générale. Un de ses rêves les plus chers, celui de réunir l'Union Astronomique Internationale en Inde vient de se concrétiser et j'en suis, comme vous tous, particulièrement heureux et satisfait.

I do not need to say how deeply honored, and moved and thankful I feel for having been so kindly raised to the highest position in the International Astronomical Union, that is, to the highest position an astronomer could dream of in his career.

I am conscious of the fact that the honor that has been bestowed upon me goes well beyond my merits, and, as I wrote to Professor Hanbury Brown in my letter of acceptance of the nomination, "when I think of the eminent astronomers who have been Presidents of the IAU before me, I cannot refrain from feeling a little uneasy"... even more than a little uneasy, I would say now.

I have, however, accepted because I felt that my nomination actually meant a recognition of the importance and of the level Astronomy has reached in Latin America, in general, and in Argentina, in particular, and because I also felt that my three years in office might perhaps encourage support to and induce the growth of our science in Latin America at large and, likewise, in countries from other geographical areas, where no or little Astronomy is being done at the present time. And this might have been taken into consideration by the Special Nominating Committee on account of the IAU's concern for spreading Astronomy teaching and research among countries that are not members of the Union.

May I also say that some prospective facts added up to help me overcome my initial reluctance to accept the nomination. I was perfectly aware that during my term of office I would enjoy the experienced and friendly advice of Robert Hanbury Brown and Richard West, the help of two active and enthusiastic General Secretaries, Jean-Pierre Swings and Derek McNally, and the warm cooperation of the six Vice-Presidents, most of whom I had known for quite some time now. Lastly, I did likewise take into consideration that the IAU Secretariat is indeed very efficient and... is located in Paris... and I must confess that I do like to come to Paris !

Naturally I also counted on the cooperation of all of you, members of the Union. I hope that you will let me have your thoughts, your suggestions, your comments,... and indeed that you will let me hear from you as often as you have ideas that you might like to share with me. Please do feel strongly that **you** are the Union.

The International Astronomical Union was established sixty six years ago. In the meantime, and, particularly in the last decade or so, Astronomy has grown tremendously. The number of researchers and of research papers, the number of meetings (symposia and colloquia and the like, IAU - and non IAU - sponsored) have increased extraordinarily and is continuously increasing at a pace which is difficult, perhaps I should say impossible to keep up with. The utilization of new technologies dominates the scene and the emphasis of the research subjects shifts dynamically. A number of new branches of Astronomy, especially since the beginning of the space technology era, have acquired stature and are bringing about extraordinary progress in our knowledge and understanding of the Universe. Space experiments like those connected with the Halley Comet, the flyby of the Voyager near planet Uranus, the placing in orbit of the Space Telescope and of the Hipparcos mission satellite, are some of the most, should we say spectacular ?, forthcoming sources of new information and new advances that will most probably change, in more or less drastic way, the conclusion from previous knowledge.

The rapid growth of our science - which also reflects in the rapid growth of the membership of the Union - is the **fact of life** for us, astronomers ; but it is not the only one. Another fact of life arises from the realization that we are immersed in a world, a large fraction of which faces socio-economic problems that bring about, as a consequence, a curtailment of the funds devoted to science in general, and to Astronomy, in particular. Some may argue that this is of no concern to us, because actually brains, which cost nothing, are the most important assets for research. I fully agree with this, but brains alone may not amount to much. An up-to-date library is the **sine qua non** complement. And if you are an observational astronomer, you would need well-equipped instruments and, perhaps, also access to astronomical satellite information.

The yearly cost of journal subscriptions and the prices of books have increased so much that not all libraries can keep up with their, until rather recently, normal purchases. On the other hand, modern astronomical facilities and the application of advanced technology imply expenditure of such an order of magnitude that only very very few countries can afford them.

Another feature of our science today is that non-conventional information is being secured at such a rate that it is impossible for the relatively not too large a number of scientists who are involved, to undertake an exhaustive analysis, and, as a result, data banks are storing a truly scientific treasure, not completely exploited, which is at the disposal of the astronomical community.

As the person who is going to preside the International Astronomical Union for the next three years, I cannot but try to build up in my mind a picture of the state of Astronomy worldwide and try to identify areas, if any, in which we should attempt to take action.

It may be that we should try to find ways to actually create and/or increase contacts and cooperation between astronomers, particularly involving young astronomers, and between different groups of the astronomical community. It may be that we should try to encourage some efforts on a regional basis, following the example set by ESO or ESA, which have proved to be so successful and rewarding in Europe. We should engage in some careful thinking to best decide in which directions our endeavors ought to go, one question that readily comes up has certainly been asked each time by everyone of my predecessors. Is the present structure and operational procedure of the IAU the best to cope with today's and near future Astronomy ? In the life of the Union, no large changes seem to have been, so far, necessary. Is such still the

case. In trying to find the best way to steer the Union and preserve its unity and integrity during the next three years I hope that we shall have opportunities to develop strong interaction with the members, individually and through the different commissions.

May I finish these words by wishing you all the best in your astronomical, as well as in your personal activities, throughout the next triennium. Thank you much for your attention."

#### 24. Closing Ceremonies

The President then invited **Dr. P. Shaver** to propose a vote of thanks to all the organizers on behalf of all participants. In a few sentences, Dr. Shaver thanked all those who so efficiently contributed to the great success of the XIXth General Assembly. On behalf of the registered guests, **Mrs. T. West** then expressed her thanks as follows :

"Ladies and Gentlemen,

On behalf of the registered guests, let me with a few words express our great thanks and gratitude to all those who made our stay in India so wonderful and unforgettable. Thanks to the Local Organizing Committee and in particular to those who organized and prepared the programme for the registered guests : to Mrs Saxena and Mrs Chatterjee. They did an excellent job.

The so-called "Ladies' Programme" was just marvelous and we greatly enjoyed it while our dear husbands worked very, very hard.

Thanks to those who organized the wonderful trip to Agra, thanks to the hotel management, to the photographers and to the volunteers who took part in the preparation of the programme for us. Thanks to all those who organized concerts. I would like to congratulate you on having such a great talent as Master Srinivasan who, I am sure, will be a good ambassador of your country.

We want you to know that from the very first day of our arrival, and until now, everything has been perfectly organized.

We really admired your hospitality, food, your fabulous country, elegant ladies in their saris, and kind Indian people.

India, which has always been a fairy tale and a far, far away country, has all of a sudden become very close to me, and I will tell you why. This is not only because of the beauty, but also because of the language. Here I discovered the words which are similar in my mother tongue, Georgian. The Georgians also say "puri" for bread, "patara" for small, "magali" for big, "dukan" for shop, and so on. I will not bother you too much with these similarities - I just want to say that for me, as for the linguist, a whole new world opened. I am sure that all of the registered guests, and particularly me, wish to come back to India and discover not only linguistic phenomena, but also more of the history, beauty, and meet again the wonderful Indian people with smiles on their faces.

Thank you."

The President then called upon the retiring General Secretary, **Dr. R.M. West** :

"Ladies and Gentlemen,  
Friends and Colleagues,

During the past ten days, I must have spoken thousands and thousands of words - and since I became General Secretary 39 months ago, I must have dictated a million words to the poor secretaries. You have all suffered at the receiving end, so let me try to be brief today before I return to my telescope.

In the nordic sagas, the individuals are described as links in a universal chain of characters, who come and go - and leave behind only the memory of their doings and deeds in the minds of their successors. Maybe it is because I was born in Viking territory that I consider myself very much in the same way, that is as a link between past and future IAU General Secretaries.

Before me were the warriors who laid the foundations for the Union. And I see behind me the future fighters lining up, eagerly awaiting to test their youthly strength and endurance. To my predecessors, to my successors and all others in this hall, I should like to say some words about the work of a General Secretary.

I could tell you about happy moments and difficult hours - about travels to meetings in distant countries and encounters with marvelous people. About waiting in airports and thoughts about the family back home. About talks in foreign languages and discussions of how the IAU can help. How I have felt wonderfully elated when problems were successfully solved, and also how there were glimpses of despair when some of my letters went unanswered.

I can tell you of coming to Paris, that pearl of a city, without time to see its beauty, but only the bleak Metro labyrinths. To arrive early in the morning at the IAU Secretariat, so small and insignificant when seen from the outside and yet big enough to embrace the entire astronomical world within its ancient walls.

You climb the squeaking stairs to your office and sit down on the chair that always rolls off to the right because the old oak-floor is no longer horizontal, and you watch with unbelieving eyes the mountain of mail in front of you.

You hear the noises of doves on the roof, the honking of horns from the boulevard. The clattering of the telex below and the loud voices of the secretaries when they have a bad intercontinental telephone connection. And when they prepare lunch, there are the undecipherable smells of real French cuisine.

But let me now come back to realities. Those in the past who thought up the schedule of IAU General Secretaries were clever indeed. Three years training as Assistant General Secretary, three years at maximum momentum as General Secretary and three years as Adviser is as much as a normal person can do. A degree in Astronomy does not necessarily prepare you for the intricacies of international administration and diplomacy. However, with the right help, everything is possible.

Thank you, Hanbury, for all your support and advice. I have indeed been exceedingly fortunate that your term coincided with mine. You and the other members of the Executive Committee have given me courage and strength ever since Patras. And I have great respect for you, Jean-Pierre, who have dealt so well with all matters of IAU meetings, be assured, dear members of the Union, that you will be in very good hands.

Let me also cordially thank my secretaries in Paris, Mrs. Manning and Miss Lours, and Mrs. Völk in Munich for your never failing patience and dedication. Without your support, the administration of the IAU would never have been as efficient as I think it is today.

And you, my Indian friends, how happy I am to see your incredible efforts crowned with success. On top of all the common features of an IAU General Assembly, which you have managed so well; where did we ever get a freshly printed Sunday issue of the Assembly Newspaper, as we here were given "Mandakini", in the buses half way to Agra. Now that is organizational talent !

Il me semble que j'avais promis d'être bref. Eh bien, je termine ici. Permettez-moi de proposer l'introduction d'une petite cérémonie qui, peut-être, fera tradition.

Mon cher successeur, voici les clefs du secrétariat à Paris. Bonne chance, Jean-Pierre, et merci pour votre attention."

Finally the President invited the newly elected General Secretary, **Dr. J.-P. Swings** to address the General Assembly :

"Being the last one to speak today is either a good or a bad thing, since most of what I wanted to say has been said already ! Anyhow, let me pronounce a few brief words before a horrible burden falls on me.

It is both with pride and with fear that I stand here today : it is definitely a great honor to have been chosen by the Special Nominating Committee, and I am most grateful to the Union for this, but, also, I am aware that a lot of responsibilities are linked to dealing with matters concerning more than six thousand IAU members.

Je demanderai donc beaucoup de patience et d'indulgence à tous les membres, tout en étant certain qu'ils m'aideront à mener à bien le mandat de Secrétaire Général. For those who did not realize, this was a sentence in French asking the IAU members to be patient with me during my term !

In the past three years I relied appreciably on the experience of my predecessor, Richard West, and I am afraid (for him) that I will have to continue. He has helped me a great deal already, and he has contributed to make the Secretariat in Paris more and more efficient, by acquiring modern equipment, so that Brigitte Manning and Danielle Lours can now "play" with a word processor, a computer, and a telex, for the true benefit of the whole Union. Thank you Richard for all you did and thanks for your help in the future.

During the last three years I had the opportunity to meet several times the past President of the IAU, Professor R. Hanbury Brown : this has been a very nice experience because Hanbury is a delightful person with a great sense of humor, and also a very efficient chairman. His advice in the coming three years will be very useful too, I am sure.

Let us now come to the future, the very near future I am afraid to say. The officers of the IAU work as a team, of course, and I am sure that Derek McNally will do a great job as Assistant General Secretary. During several years the newly elected President, Professor Jorge Sahade and I, have had similar astrophysical interest concerning those weird objects called Symbiotic Stars. In fact I hope that the two of us will form a good and productive symbiosis, and that it will be the main goal of the IAU to continue on promoting astronomy in all geographical areas, and on sponsoring as many scientific activities as possible : colloquia, symposia, regional meetings, etc. Mailing travel grants to young and less young astronomers,

or sending money to meeting organizers provides the Assistant General Secretary or the General Secretary, I am sure, with the nice feeling of doing something concrete in the promotion of our discipline. It should be said that all this happens while trying to keep the administrative costs to a strict minimum, which has been and still is the wish of the IAU Executive Committee, and has been noted with satisfaction by the Finance Committee.

Ayant vu mon prédécesseur en action depuis 1982, je me rends compte que la période entre aujourd'hui et août 1988 sera très occupée et que ma femme et mes deux fils ne me verront pas beaucoup à la maison. Je leur demande d'être indulgents..., comme ils le sont déjà maintenant. Je ne voudrais pas poursuivre cette petite allocution sans remercier Mr. Deloz, du Ministère de l'Education Nationale Belge pour son soutien financier à l'antenne de Liège de l'UAI et à Denise Fraipont qui s'occupe si bien de celle-ci.

I believe I am a "porte-parole" of all of you when I say that I was impressed by the quality of the opening ceremony : all speeches were very nice, but, of course, we have all been moved by the friendly words of the Prime Minister of India Honorable Rajiv Gandhi. His smile, his attitude that was "décontractée", the fact that he definitely enjoyed the company of his fellow countryman Hanbury Brown, all this made the ceremony enjoyable, and something that we shall all undoubtedly remember and tell our children about. So once again, after the past President, the past General Secretary, Peter Shaver and Tamriko West, let me thank the National Organizing Committee, as well as the Local Organizing Committee, that is both teams from Bangalore and from Delhi, for all they did for us. There were many Indian astronomers attending this General Assembly, about three hundred I believe : I thus sincerely hope that this gathering has been successful in promoting Astronomy in this country (I am coming back to one of the aims of the IAU I mentioned earlier), that many contacts have been made between Indian and foreign astronomers, and, perhaps and hopefully, that a few collaborations have started on this occasion.

I actually wish to express my gratitude to all those who came here to Delhi and to tell them that I hope to see them in Baltimore in 1988. The US National Organizing Committee and Local Organizing Committee have seen a beautiful example here in Delhi and I am sure they will do their best to set up a very successful General Assembly. In the meanwhile, this is a message for all of you astronomers, members or not of the IAU, do not hesitate to call upon me for help and/or especially for constructive suggestions : the life of the Union relies on all of you, definitely not only on the officers !

Merci pour votre patience et votre attention, et "Au revoir", à Baltimore en août 1988.