

## CHAPTER V

### REPORT OF THE EXECUTIVE COMMITTEE 1997-2000

#### 1. Executive Committee 1997-2000

##### 1.1. Composition of the Executive Committee

During the triennium 1997-2000, the Executive Committee was composed as follows:

President:	Robert P. Kraft	
President-Elect:	Franco Pacini	
General Secretary:	Johannes Andersen	
Assistant General Secretary:	Hans Rickman	
Vice-Presidents:	Claudio Anguita	(deceased March 3, 2000)
	Catherine Cesarsky	
	Bambang Hidayat	
	Norio Kaifu	
	Nikolay Kardashev	
	Virginia Trimble	
Advisors:	Lodewijk Woltjer	(Past President)
	Immo Appenzeller	(Past General Secretary)

##### 1.2. Meetings of the Executive Committee

The Executive Committee met as follows during the reporting period:

70th Meeting, August 27, 1997 at the XXIIIrd General Assembly in Kyoto, Japan

71st Meeting, July 2-3, 1998 at Observatoire de Paris, France

72nd Meeting, June 18-20, 1999 at the European Southern Observatory, Santiago,  
Chile

73rd Meeting, August 7-9 & 15, 2000 at the University of Manchester, UK

The business conducted by the Executive Committee is recorded in the Minutes of these meetings. Summaries of these Minutes have appeared in the IAU Information Bulletin (EC69 & 70: IB81, pp. 24-25; EC71: IB83, pp. 8-9; EC72: IB86, p. 11). Any urgent business between meetings, conducted by correspondence, is recorded in the Minutes of the following EC meetings.

##### 1.3. Officers' Meetings

Between the meetings of the EC, the Officers (President, President-Elect, General Secretary, and Assistant General Secretary) met at the IAU Secretariat in Paris on February 19-20, 1998, February 11-12, 1999, and March 2-3, 2000.

## 2. Membership of the Union

### 2.1. National Membership

In conformity with ICSU policy and upon applications by the Academies of Science of these countries, the Former Yugoslavian Republic of Macedonia became a Full Member of the IAU as of January 1, 1998, and Uzbekistan became an Associate Member effective January 1, 1999.

Due to five years of non-payment of dues, the membership of Azerbaijan terminated December 31, 1997 (IAU Statutes §7).

The Executive Committee approved a change in the Category of Canada from VI to V, effective January 1, 1998 and of the United States from VIII½ to IX, effective January 1, 2000.

Number of Adhering Organizations as of April 15, 2000	62
Full Members	55
Associate Members	7

In addition, applications for Associate Membership were received during the triennium from Cuba, Jordan, Morocco, and The Philippines and were forwarded to the XXIVth General Assembly for decision.

### 2.2. Individual Membership

Number of individual members admitted at the XXIIIrd General Assembly	741
Number of individual members as of April 15, 2000	8185
Number of Consultants	190

The Executive Committee is saddened to report the death of the following 181 members of the Union, which have been reported to the Secretariat since the XXIIIrd General Assembly:

Alberto Abrami	J. J. Burger	Heino Eelsalu
Claudio Anguita	Mikl F. Bykov	Heinrich K. Eichhorn
Ivan Atanasijevic	Patrick B. Byrne	Öystein Elgarøy
Kamuran Avcioglu	Georgeanne R. Caughlan	Rebecca Anne Wood
Bronislav K. Bagildinsky	Wai Y. Chau	Elson
M. C. Ballario	Chung-chieh Cheng	Gerhard Elwert
Edibe Balli	Woyk E. Chvojkova	David Emerson
Jeno Barnothy	Petar-Kasimir Colic	Christian Engelbrecht
David B. Beard	Salvatore Cristaldi	Nicolaj Erpylev
Wilhelm Becker	Imre K. Csada	John W. Evans
Ravilsh Bibarsov	Bhaskar Datta	Paolo Farinella
William Blitzstein	A. Dinescu	Boris Garfinkel
Valentin Boriakoff	F. Dossin	John E. Geake
Pierre Bouvier	C. Dramba	Hubert Gent
Izabella I. Brejdo	N. Durgaprasad	Samuel J. Goldstein
Hermann A. Brück	Edward R. Dyer	Louis C. Green
Günter E. Brückner	Bengt Edlén	Virginia Grigorieva
Paul Bruston	Terry W. Edwards	Stefania Grudzińska

Kjeld Gyldenkerne	Jean-Marie Mariotti	Dennis W. Sciamia
Nils Hansson	James Wai-Kee Mark	Elizabeth L. Scott
Josette Hecquet	William Markowitz	Irving E. Segal
Jean Heidmann	William L. Martin	Wagner Sessin
Gerhard Herzberg	J. Dermott McCrea	Alexander Sharov
Philip W. Hill	Sir William McCrea	Alexander Shcherbakov
Juichi Hitotsuyanagi	Yuri A. Medvedev	Luiz E. da Silva Machado
Robert Hjellming	Andrew Michalitsianos	Patan Deen Singh
Arthur A. Hoag	Fahmy I. Mikhail	Jaromir Siroky
Erik B. Holmberg	Nicolaj Mikhelson	Arne Slettebak
Yoshimasa H. Hosokawa	Freeman D. Miller	E. M. Slonim
H. Derek Howse	Igor Minin	Keith Colin Smith
Wilhelmina Iwanowska	Ludwik V. Mirzoyan	V. V. Sobolev
Vladimir A. Izvekov	Natale Missana	John D. Strong
Toivo S. Jaakkola	Michele B. M. M. Moons	Björn Sundelius
Friedrich W Jäger	Paul Muller	Yoshimasa Suzuki
Carlos O. R. Jaschek	Kashinath Nandy	Thomas L. Swihart
R. E. Jennings	Rogério S. de Sousa	Victor G. Szebehely
Franz D. Kahn	Nunes	Salvatore Taffara
T. Kaiser	Brian T. O'Leary	Giuseppe Tagliaferri
Karl W. Kamper	Yngve Öhman	Roelf Jan Takens
Vijay K. Kapahi	Claus Österwinter	D. Teherany
Joseph Kaplan	Bernard M. Oliver	V. S. Troitsky
Vadim Karpinskij	Frank Orrall	Ietsune Tsubokawa
William M. Kaula	Martinez de Pascual	Sergio Vaghi
Philip C. Keenan	Olaf Pedersen	H.C. van de Hulst
John E. Kennedy	Paris Pişmiş de Recillas	J. van Diggelen
Gabriel Kojoian	Cyril Ponnampereuma	Gijsbert van Herk
Ivan Kopylov	Daniel M. Popper	Johannes van Paradijs
Shin Koyama	Irina Prokofeva	Doraswamy Venkatesan
Gerhard Krämer	Charles F. Prosser Jr.	Gennadij Vyalshin
J. I. Kumsishvili	K Narahari Rao	Silvia Waldhausen
Paul E. Kustaanheimo	Anders Reiz	Åke A. E. Wallenquist
Albin Lagerqvist	Truls S. Ringnes	Patrick A. Wayman
George Edward Langer	Alex W. Rodgers	Richard Allan White
Barry M. Lasker	Colin A. Ronan	Robert L. Wildey
Bertel E. Laurent	Olof E. H. Rydbeck	Frank Bradshaw Wood
Maryvonne Le Dourneuf	Victor Safronov	Charles E. Worley
Dorothy Davis Locanthi	Dusan Saletic	Helen Greuter Wright
Madeleine Lunel	Natalie S. Samojlowa-	Frances W. Wright
Nina Magnaradze	Jachontowa	Igor Zacharov
Elena A. Makarova	Yuzo Sato	Cornelis Zwaan
Andrej V. Mandzhos	Aert Schadee	
Miklos Marik	David N. Schramm	

### 3. Divisions, Commissions & Working Groups

#### 3.1. Divisions

##### DIVISION I

Commissions 8 & 24 prepared to merge into one new Commission 8, *Astrometry* at the XXIVth General Assembly.

##### DIVISION III

During the triennium, the name of Division III was adjusted to *Planetary Systems Sciences* to reflect that also extrasolar planets are included in the activities of the Division. Moreover, the organisational basis for the IAU bodies dealing with planetary system nomenclature has been revised and updated (see below).

##### DIVISION IX

The name of Division IX was updated to *Optical and Infrared Techniques* to better reflect its current activities.

#### 3.2. Commissions of the Executive Committee

Commissions 38 and 46 prepared to merge into one new Commission 46, *Astronomy Education and Development*, to include also the activities of the *Working Group on the World-Wide Development of Astronomy* of the Executive Committee.

#### 3.3. Working Groups of the Executive Committee

Responsibility for the *Working Group on Planetary System Nomenclature* was transferred from the Executive Committee to Division III effective February 2000. Preparations were also made for transferring the activities of the EC *Working Group on the World-Wide Development of Astronomy* to the reorganised Commission 46, *Astronomy Education and Development* after the XXIVth General Assembly. Finally, the EC *Working Group on Astronomy from the Antarctic* proposes that it be discontinued at the same time.

#### 3.4. Working Groups of Divisions and Commissions

##### DIVISION II

With the approval of the Executive Committee, responsibility for the *Working Group on Planetary System Nomenclature* and the *Committee on Small Body Nomenclature* is assigned to Division III, effective February 2000. Formal *Terms of Reference* for these bodies have also been approved by the Executive Committee and are reproduced in the report of Division III in this volume.

##### DIVISION IV

Division IV created a Working Group on *Hot Massive Stars*.

##### DIVISION VI

Division VI created a Working Group on *Star Formation*.

## 4. Scientific Activities

### 4.1. Environmental Challenges to Astronomy

Follow-up actions to Resolution A1 from the Kyoto General Assembly (Trans. IAU Vol. XXIII B, p. 31) have been a major activity during the triennium. A *Policy Statement on the Environment* was approved at the 71st meeting of the Executive Committee and is reproduced in Appendix I to this report.

As a further high-profile initiative, the *IAU-COSPAR-UN Special Environmental Symposium*, No. 196, on "*Preserving the Astronomical Sky*", was held in conjunction with the UNISPACE III conference of the *UN Committee on the Peaceful Uses of Outer Space (COPUOS)* in Vienna, Austria, in July 1999. The recommendations of the Symposium were presented to the main UN Conference and were largely included in its recommendations for the future. With the subsequent endorsement of these recommendations by the UN General Assembly in late 1999, these now form part of the official UN policy for the development of space activities in the first decades of the new millennium. The IAU is presently working with interested Member States, space agencies, and other relevant international and national Unions, scientific committees, and research organisations to develop specific proposals for international environmental standards for future space experiments, to be eventually submitted to UN-COPUOS.

Finally, as yet another step in raising public awareness of the increasing environmental challenges to astronomy, a *Policy Forum* was published in the journal *Science* (vol. 288, p. 443, April 21, 2000).

### 4.2. Research on Near-Earth Objects

Research on *Near-Earth Objects (NEOs)* – minor planets and comets the orbits of which may eventually take them near the Earth – emerged during the triennium as a subject of dramatically increasing scientific activity as well as public and political attention. The IAU occupies a central role in this scientific field through Division III, Commission 20, and associated Working Groups, and especially through its scientific sponsorship of the *IAU Minor Planet Center* at the Smithsonian Astrophysical Observatory, USA.

After a long history as a quiet, essentially self-regulating backwater in the IAU structure, NEO research reached a point when a number of issues required attention and action at the level of the Executive Committee. A *Policy Statement* by the Executive Committee (see Appendix II to this report) defined these areas and set down high-level IAU policies for addressing them. The essential concerns are:

- (i) The continued coordinated international development of search, follow-up, and orbital computation and prediction techniques for NEOs. This is being addressed by the appropriate bodies under IAU Division III and by an initiative to establish properly defined Terms of Reference and a proper contractual basis for the operation of the Minor Planet Center. A thorough discussion of these issues was also held during the *IMPACT Workshop* in Torino, Italy, in June 1999, which was co-sponsored by the IAU and whose Scientific Organizing Committee was co-chaired by the Presidents of IAU Commissions 15 and 20.
- (ii) The establishment of an open, international refereeing service for any claims of a future potential hazardous passage of a NEO. This has been established by the Working Group on NEOs of Divisions I and III.

- (iii) The definition of suitable procedures for communications concerning harmless as well as potentially hazardous events to responsible authorities as well as to the public. These were also debated in depth at the IMPACT Workshop.

There is little doubt that NEO research and public attention to it will continue to grow in the foreseeable future. The scientific issues and potential threat – of such magnitude as it might be – which are posed by NEOs are global, and scientific strategies, collaborations, and coordination should be designed accordingly. The IAU should continue to play a pivotal role in this development, but for this to succeed will require careful attention to the subject, internally in the IAU as well as externally.

#### 4.3. IAU Scientific Meetings

The IAU programme of scientific meetings is probably the highest-profile aspect of the scientific activities of the IAU. As a guide for prospective organisers of such scientific meetings, *the Rules for IAU Sponsored Scientific Meetings*, with associated application and report forms, are maintained on-line at the IAU web site. For reference, they are also reproduced in this volume.

#### IAU SCIENTIFIC MEETINGS HELD SINCE THE XXIIIIRD GENERAL ASSEMBLY AND UP TO THE XXIVTH GENERAL ASSEMBLY INCLUDED

*XXIIIrd IAU General Assembly*  
Kyoto, Japan, August 17-30, 1997

##### *IAU Symposia*

- 190 *New Views of the Magellanic Clouds*  
Victoria, Canada, July 13-19, 1998
- 191 *Asymptotic Giant Branch Stars*  
Montpellier, France, August 28-September 1, 1998
- 192 *The Stellar Content of Local Group Galaxies*  
Cape Town, South Africa, September 7-12, 1998
- 193 *Wolf-Rayet Phenomena in Massive Stars and Starburst Galaxies*  
Puerto Vallarta, Mexico, November 3-7, 1998
- 194 *Activity in Galaxies and Related Phenomena*  
Yerevan, Armenia, August 17-21, 1998
- 195 *Highly Energetic Physical Processes and Mechanisms for Emission from Astrophysical Plasmas*  
Bozeman, MT, USA, July 6-10, 1999
- 196 *Preserving the Astronomical Sky: An IAU/COSPAR/UN Special Environmental Symposium*  
Vienna, Austria, July 12-16, 1999
- 197 *Astrochemistry: from Molecular Clouds to Planetary Systems*  
Sogwipo, Rep. of Korea, August 23-27, 1999
- 198 *The Light Elements and their Evolution*  
Natal, Brazil, November 22-26, 1999

- 199 ***The Universe at Low Radio Frequencies***  
Pune, India, November 30-December 4, 1999
- 200 ***The Formation of Binary Stars***  
Potsdam, Germany, April 10-15, 2000
- 201 ***New Cosmological Data and the Values of the Fundamental Parameters***  
Manchester, UK, August 7-10, 2000
- 202 ***Planetary Systems in the Universe - Observation, Formation and Evolution***  
Manchester, UK, August 7-10, 2000
- 203 ***Recent Insights into the Physics of the Sun and Heliosphere  
- Highlights from Soho and other Space Missions***  
Manchester, UK, August 7-10, 2000
- 204 ***The Extragalactic Infrared Background and its Cosmological Implications***  
Manchester, UK, August 15-18, 2000
- 205 ***Galaxies and their Constituents at the Highest Angular Resolutions***  
Manchester, UK, August 15-18, 2000

#### ***IAU Colloquia***

- 168 ***Cometary Nuclei in Space and Time***  
Nanjing, China, May 18-22, 1998
- 169 ***Variable and Non-Spherical Stellar Winds in Luminous Hot Stars***  
Heidelberg, Germany, June 15-19, 1998
- 170 ***Precise Stellar Radial Velocities***  
Victoria, Canada, June 21-26, 1998
- 171 ***The Low Surface Brightness Universe***  
Cardiff, UK, July 6-10, 1998
- 172 ***The Impact of Modern Dynamics in Astronomy***  
Namur, Belgium, July 6-11, 1998
- 173 ***Evolution and Source Regions of Asteroids and Comets***  
Tatranská Lomnica, Slovak Rep., August 24-28, 1998
- 174 ***Small Galaxy Groups***  
Turku, Finland, June 13-18, 1999
- 175 ***The Be Phenomenon in Early-Type Stars***  
Alicante, Spain, June 28-July 2, 1999
- 176 ***The Impact of Large-Scale Surveys on Pulsating Star Research***  
Budapest, Hungary, August 8-12, 1999
- 177 ***Pulsar Astronomy - 2000 and Beyond***  
Bonn, Germany, August 30-September 3, 1999
- 178 ***Polar Motion: Historical and Scientific Problems***  
Cagliari, Italy, September 27-30, 1999
- 179 ***Cyclical Evolution of Solar Magnetic Fields: Advances in Theory and Observation***  
Kodaikanal, India, December 13-16, 1999

- 180 ***Towards Models and Constants for Sub-Microarcsecond Astrometry***  
Washington, DC, USA, March 20-25, 2000
- 181 ***Dust in the Solar System and other Planetary Systems***  
Canterbury, UK, April 10-14, 2000
- 182 ***Sources and Scintillations: Refraction and Scattering In Radio Astronomy***  
Guiyang, China, April 17-21, 2000

### ***Regional Meeting***

IXth Latin American Regional Meeting in Astronomy  
Tonantzintla, Puebla, Mexico, November 9-13, 1998

### ***Special Educational Workshop***

IAU-COSPAR-UN Special Workshop on Education at UNISPACE III  
Vienna, Austria, July 20-22, 1999

### ***Co-Sponsored Meetings***

32<sup>nd</sup> ***COSPAR Scientific Assembly (COSPAR, IAU)***  
Nagoya, Japan, July 12-19, 1998

33<sup>rd</sup> ***COSPAR Scientific Assembly (COSPAR, IAU)***  
Warsaw, Poland, 16 -23 July 2000

***IMPACT Workshop (IAU, ESA, NAS, ASI, SGF, Alenia Spazio, Planet. Soc.)***  
Torino, Italy, June 1-4, 1999

## **5. Publications**

The change of IAU Publisher from *Kluwer Academic Publishers* to the *Astronomical Society of the Pacific* took place during the triennium, effective for the proceedings of meetings held after January 1, 1998. Thus, the *IAU Transactions* Vol. XXIII A & B and *Highlights of Astronomy* Vol. 11 A & B were published by *Kluwer*, as are the *IAU Symposium* proceedings through Symposium No. 189. The IAU publications printed by the *Astronomical Society of the Pacific* thus begin with the *IAU Transactions* Vol. XXIV A (*Reports on Astronomy 1996-1999*) and the *IAU Symposia* from No. 190 onwards.

With the change of IAU Publisher, the opportunity was taken to redesign the cover of the *Information Bulletin*, which had remained basically unchanged since 1982.

The individual IAU publications which have appeared during the triennium are listed in the following; continually updated listings with all particulars are maintained at the IAU web site.

***IAU Information Bulletin: Nos. 81-87*** (January 1998 through June 2000)  
Printed and distributed for the IAU by the *Astronomical Society of the Pacific*

***Highlights of Astronomy, Vol 11A and Vol.11 B***  
Ed. J. Andersen, *Kluwer Academic Publishers*, Dordrecht, 1998

***Transactions of the International Astronomical Union, Vol. XXIII B***  
(*Proceedings of the XXIIIrd General Assembly*)  
Ed. J. Andersen, *Kluwer Academic Publishers*, Dordrecht, 1999

***Alphabetical list of members/Liste alphabétique des membres***

Ed. J. Andersen, Kluwer Academic Publishers, Dordrecht, 1999

***Transactions of the International Astronomical Union, Vol. XXIVA***

*(Reports on Astronomy 1996-1999)*

Ed. J. Andersen, Astr. Soc. Pacific, 2000

***IAU Symposium Proceedings***

- 178 ***Molecules in Astrophysics: Probes and Processes***  
Leiden, Netherlands, July 1-5, 1996  
Ed. E. F. van Dishoeck  
Kluwer, ISBN 0-7923-4538-X, 1997
- 179 ***New Horizons from Multi-Wavelength Sky Surveys***  
Baltimore, USA, August 26 - 30, 1996  
Eds: B.J. McLean, D.A. Golombek, J.J.E. Hayes & H.E. Payne  
Kluwer, ISBN 0-7923-4802-8, 1998
- 180 ***Planetary Nebulae***  
Groningen, The Netherlands, August 26-30, 1996  
Eds: H.J. Habing & H.J.G.L.M. Lamers  
Kluwer, ISBN 0-7923-4892-3, 1997
- 181 ***Sounding Solar and Stellar Interiors***  
Nice, France, September 30 - October 3, 1996  
Eds: J. Provost & F.-X. Schmieder  
Kluwer, ISBN 0-7923-4838-9, 1997
- 182 ***Herbig-Haro Flows and the Birth of Low-Mass Stars***  
Chamonix, France, January 20-26, 1997  
Eds. B. Reipurth & C. Bertout  
Kluwer, ISBN 0-7923-4661-0, 1997
- 183 ***Cosmological Parameters and the Evolution of the Universe***  
Kyoto, Japan, August 18-22, 1997  
Eds: K. Sato  
Kluwer, ISBN 0-7923-5459-1 (HB), -5460-5 (PB), 1998
- 184 ***The Central Regions of the Galaxy and Galaxies***  
Kyoto, Japan, August 18-22, 1997  
Eds: Y. Sofue  
Kluwer, ISBN 0-7923-5060-X (HB), -5061-8 (PB), 1998
- 185 ***New Eyes to See inside the Sun and the Stars: Pushing the Limits of Helio- and Astero-Seismology with new Observations from the Ground and from Space***  
Kyoto, Japan, August 18-22, 1997  
Eds: D.W. Kurtz & J. Leibacher  
Kluwer, ISBN 0-7923-5075-8, 1998
- 186 ***Galaxy Interactions at High and Low Redshift***  
Kyoto, Japan, August 26-30, 1997  
Eds: J. Barnes & D.B. Sanders  
Kluwer, ISBN 0-7923-5832-5 (HC), 0-7923-5833-3 (PB), 1999

- 188 ***The Hot Universe***  
Kyoto, Japan, August 26-30, 1997  
Eds. K. Koyama, S. Kitamoto & M. Itoh  
Kluwer, ISBN 0-7923-5058-8, 1998
- 189 ***Fundamental Stellar Properties: The Interaction between Observation and Theory***  
Sydney, Australia, January 13-17, 1997  
Eds. T. Bedding, A.J. Booth & J. Davis  
Kluwer, ISBN 0-7923-4651-3, 1997
- 190 ***New Views of the Magellanic Clouds***  
Victoria, Canada, July 13-19, 1998  
Eds. Y.-H. Chu, J. Hesser & N. Suntzeff  
Astr. Soc. Pacific, ISBN 1-58381-021-8, 1999
- 191 ***Asymptotic Giant Branch Stars***  
Montpellier, France, August 28 - September 1, 1998  
Eds. A. Lebre, T. le Bertre & C. Waelkens  
Astr. Soc. Pacific, ISBN 1-886733-90-2, 1999
- 192 ***The Stellar Content of Local Group Galaxies***  
Cape Town, South Africa, September 7-12, 1998  
Eds. P. Whitelock & R. Cannon  
Astr. Soc. Pacific, ISBN 1-886733-82-1, 1999
- 193 ***Wolf-Rayet Phenomena in Massive Stars and Starburst Galaxies***  
Puerto Vallarta, Mexico, November 3-7, 1998  
Eds. K.A. van der Hucht, G. Koenigsberger & P.R.J. Eenens  
Astr. Soc. Pacific, ISBN 1-58381-004-8, 1999
- 194 ***Active Galactic Nuclei and Related Phenomena***  
Byurakan, Armenia, August 17-22, 1998  
Eds. Y Terzian, D. Weedman & E. Khachikian  
Astr. Soc. Pacific, ISBN 1-886733-008-0, 1999
- 195 ***Highly Energetic Physical Processes and Mechanisms for Emission from Astrophysical Plasmas***  
Bozeman, MT, USA, July 6-10, 1999  
Eds. H. Hudson & S. Tsuruta  
Astr. Soc. Pacific, ISBN 1-58381-038-2, 2000
- 197 ***Astrochemistry: from Molecular Clouds to Planetary Systems***  
Sogwipo, Rep. of Korea, August 23-27, 1999  
Eds. Y.C. Minh & E.F. van Dishoeck  
Astr. Soc. Pacific, ISBN 1-58381-034-X, 2000

#### ***IAU Colloquium Proceedings***

- 161 ***Astronomical and Biochemical Origins and the Search for Life in the Universe***  
Capri, Italy, July 1-5, 1996  
Eds. C.S. Cosmovici, S. Bowyer & D. Werthimer  
Editrice Compositori, Bologna, ISBN 88-7794-092-1, 1997

- 162 ***New Trends in Astronomy Teaching***  
London and Milton Keynes, UK, July 8-12, 1996  
Eds: L. Gouguenheim, D. McNally & J.R. Percy  
Cambridge University Press, ISBN 0-5221-62373-1, 1998
- 163 ***Accretion Phenomena and Related Outflows***  
Port Douglas, Australia, July 15-19, 1996  
Eds: D.T. Wickramasinghe, G. Bicknell & L. Ferrario  
ASP Conf. Ser. Vol. 121, ISBN 1-886733-41-4, 1997
- 164 ***Radio Emission from Galactic and Extragalactic Compact Sources***  
Socorro, New Mexico, USA, April 21-26, 1997  
Eds: J.A. Zensus, G.B. Taylor & J.M. Wrobel  
ASP Conf. Ser. Vol. 144, ISBN 1-886733-64-3, 1998
- 165 ***Dynamics and Astrometry of Natural and Artificial Celestial Bodies***  
Poznań, Poland, July 1-5, 1996  
Eds: I. Wyrzyższczak, J.H. Lieske & R.A. Feldman  
Kluwer Acad. Publ., ISBN 0-7923-4574-6, 1997
- 166 ***The Local Bubble and Beyond***  
Garching b. München, Germany, April 21-25, 1997  
Eds: D. Breitschwerdt, M.J. Freyberg & J. Trümper  
Springer-Verlag (Lecture Notes in Physics, Vol. 506), ISBN 3-540-64306-0, 1998
- 167 ***New Perspectives on Solar Prominences***  
Aussois, France, April 28 - May 4, 1997  
Eds: D. Webb, D. Rust, & B. Schmieder  
ASP Conf. Ser. Vol. 150, ISBN 1-886733-70-8, 1998
- 169 ***Variable and Non-Spherical Stellar Winds in Luminous Hot Stars***  
Heidelberg, Germany, June 15-19, 1998  
Eds: B. Wolf, O. Stahl & A.W. Fullerton  
Springer-Verlag (Lecture Notes in Physics, Vol. 523), ISBN 3-540-65702-9, 1999
- 170 ***Precise Stellar Radial Velocities***  
Victoria, Canada, June 21-26, 1998  
Eds: J.B. Hearnshaw & C.D. Scarfe  
ASP Conf. Ser. Vol. 185, ISBN 1-58381-011-0, 1999
- 171 ***The Low Surface Brightness Universe***  
Cardiff, UK, July 6-10, 1998  
Eds: J. Davies, C. Impey & S. Phillips  
ASP Conf. Ser. Vol. 170, ISBN 1-886733-92-2, 1999
- 172 ***The Impact of Modern Dynamics In Astronomy***  
Namur, Belgium, July 6-11, 1998  
Eds: J. Henrard & S. Ferraz-Mello  
Kluwer Acad. Publ., ISBN 0-7923-5842-2, 1999
- 173 ***Evolution and Source Regions of Asteroids and Comets***  
Tatranská Lomnica, Slovak Rep., August 24-28, 1998  
Eds: J. Svoreň, E.M. Pittich & H. Rickman  
Astronomical Institute of the Slovak Academy of Sciences, Tatranská Lomnica  
ISBN 80-88780-32-2, 1999

## 6. Educational Activities

### 6.1. The IAU-UNESCO International Schools for Young Astronomers (ISYA's)

The following ISYA's took place during the triennium:

- 23rd ISYA Zanjan, Iran, July 4-23, 1997
- 24th ISYA Bucharest, Romania, July 26-August 14, 1999

### 6.2. The Teaching for Astronomy Development (TAD) Programme

The recently instituted Teaching for Astronomy Development (TAD) programme helps to build up astronomy education at the university level, including education of future teachers at the high school level, in countries where astronomy has not existed before or been dormant, and which have requested such help. Programs for specific countries extend over a few years and comprise periodical visits by lecturers, support for local or regional meetings, and grants for educational equipment.

The majority of activities under the TAD programme have been focused on Vietnam, Central America, and Morocco (see previous Information Bulletins for details). They have been supported in part by UNESCO.

### 6.3. Exchange of Astronomers

The aim of this programme is to provide support to astronomers from developing countries who spend periods over three months at a foreign host institution to pursue their training and formation in astronomy and their scientific collaboration with other astronomers. During the triennium 1997-1999, 37 grants totalling ~68,700 CHF were awarded to astronomers on this programme. A detailed list of grantees is published in this volume, Chapter VI, Commission 38.

### 6.4. United Nations

A joint *IAU-COSPAR-UN Special Educational Workshop* was held during the UNISPACE III Conference in Vienna in July 1999 and was well attended and well received. Its recommendations were presented to the main Conference and generally strongly supported in the *Report and Recommendations* of UNISPACE III, which has later been endorsed by the UN General Assembly. Synergistic initiatives between the IAU, COSPAR, and the *Regional Educational Centres for Space Science and Technology*, affiliated to the United Nations, were among these recommendations and are currently being actively explored.

The IAU was represented by the General Secretary and two other speakers at the Eighth *UN/ESA Workshop on Basic Space Science*, held in Jordan, March 13-17, 1999. The IAU was also represented by a speaker at the Ninth UN/ESA Workshop in Toulouse, France, June 27-30, 2000.

## 7. Relations to Other Organisations

### 7.1. ICSU

The IAU was represented by the General Secretary at the following meetings:

- Meetings of the Standing Committee on Membership, Structure and Statutes (SCMSS), Paris, October 1-3, 1997 & April 13, 1999
- 37th General Committee Meeting, Vienna, Austria, April 23-24, 1998

- Extraordinary Session of the General Assembly, Vienna, Austria, April 25, 1998
- 26th General Assembly, Cairo, Egypt, September 20-30, 1999.

The IAU was represented by J. Fierro (President, Commission 46) at the Conference on *the Programme for Capacity Building in Science*, June 24-25, 1999, organised in conjunction with the ICSU/UNESCO *World Conference on Science* in Budapest, Hungary, in June, 1999.

## 7.2. COSPAR

The IAU was represented by the General Secretary at the following meetings:

- 59th Bureau, March 19, 1999, Paris
- 60th Bureau, March 31-April 1, 2000, Paris
- 32nd Scientific Assembly, Warsaw, Poland, July 15-23, 2000

The IAU was represented by A.A. Boyarchuk at the 32nd Council, Nagoya, Japan, July 12-19, 1998

## 7.3. UN-COPUOS

The IAU was represented by the General Secretary at the meetings of *the UN Committee on the Peaceful Uses of Outer Space (COPUOS)*, held February 9-20, 1998, and February 20-24, 2000 (all Scientific and Technical Subcommittee of COPUOS) and July 18, 1999 (full Committee). Presentations were made at these meetings on the environmental challenges to astronomy (1998-1999) and on *International Coordination of Research on Near-Earth Objects* (2000).

The IAU was represented by the General Secretary at the *Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)* in Vienna, July 19-30, 1999. Two events under the *Technical Forum* accompanying the Conference were organised by the IAU jointly with COSPAR and the UN *Office of Outer Space Affairs*: Symposium 196 on *Preserving the Astronomical Sky* (July 12-16), and a Special Educational Workshop: *Capacity Building in Astronomy and Basic Space Science* (July 20-22).

## 7.4. Representatives to Other Organisations

A list of representatives 1997-2000 is in *Trans. IAU XXIII B*, p. 57; the full list for 2000-2003 as approved at EC 74 is published in this volume.

## 8. Administrative Matters

### 8.1. Revision of Statutes, Bye-Laws and Working Rules

During the triennium, revisions of the *Statutes and Bye-Laws* were prepared for submission to the vote of the XXIV<sup>th</sup> General Assembly. These revisions were primarily to clarify the rules applying for Associate Membership of the Union, to update the rules for the Officers and Boards of Divisions in the light of experience gathered during the first six years of the Divisional structure, and to allow the Chairs of Working Groups of the Executive Committee to nominate new Individual Members of the Union on the same basis as the Presidents of Divisions. The *Working Rules* were updated by the Executive Committee to reflect practical procedures regarding these changes. The complete texts of all these documents as approved at the end of the XXIV<sup>th</sup> General Assembly are reproduced, Chapter VII of this volume.

## 8.2. Secretariat

The Secretariat in Paris was headed throughout the triennium by *Ms. Monique Léger-Orine* with the dedication and efficiency that has characterised her decade-long service for the IAU. Relations to Member States, accounts and financial matters, and preparation of the General Assembly are among her primary responsibilities.

Effective July 1, 1998, *Ms. Julie Saucedo* resigned after eight years of service in the Secretariat to seek new career challenges. The IAU was fortunate to find immediately an able successor in *Ms. Jodi Greenberg* of the United States, who integrated quickly and smoothly into the work of the Secretariat. She has been primarily in charge of the maintenance of the Membership Directory and the preparation of the Information Bulletins.

At the start of the triennium, the offices of the Secretariat were given a much-needed facelift. Walls were renovated and repainted; new and more rational furniture installed, new computers purchased and installed, and archival material moved to the storage room.

The *IAU web site* is an aspect of the service of the Secretariat which has been given much time and attention during the triennium. First, it was decided that a permanent URL was needed, independent of any other institutions. After a period with a temporary address ([www.intastun.org](http://www.intastun.org)) it became possible to secure the URL [www.iau.org](http://www.iau.org), which is intended to be permanent. During the triennium reported here, the files have been physically stored at the Astronomical Observatory, University of Copenhagen.

From a relatively modest beginning, the information available at the web site has expanded to include news and deadlines; contact information to the Secretariat, Officers, Executive Committee, Adhering Organisations and related Unions and other Organisations as well as all Divisions and Commissions; the current Statutes, Bye-Laws, and Working Rules; a searchable on-line Membership Directory; and information on the programme of IAU sponsored scientific meetings, including the Rules for Scientific Meetings, lists of past and future meetings, and all meeting proposal and reporting forms as well as forms for Travel Grant applications. Updated lists of IAU publications and on-line versions of recent IAU Information Bulletins are maintained on the web, and a section on *Frequently Asked Questions* gives information on questions known to be of particular interest to readers, whether constant or connected to temporary events (e.g. Solar eclipses). The web site has also been used extensively to provide up-to-date information to members in preparation for the XXIVth General Assembly. Further expansions are foreseen for the future.

## 8.3. Archives

As described in previous reports, former IAU President, Prof. Adriaan Blaauw had undertaken a complete review, sorting, packing, and inventory of all archival material in the possession of the Union for the years 1919-1970. This monumental task was completed in 1998 with the deposit of the entire material in the Archives of the *Académie des Sciences* in Paris, following an Agreement according to which the Académie will undertake the preservation of the IAU Archives to professional standards. Qualified astronomers and historians of science will have access to the IAU Archives upon the written permission of the IAU General Secretary. An Inventory of the Archives 1919-1970 has been prepared by Prof. Blaauw and published by the IAU; it is available for a nominal fee from the Secretariat and from the Kapteyn Institute, Groningen, The Netherlands.

As another aspect of the organisation of the archives of the Union, the IAU membership data base has been completed to comprise all members of the Union since its founding in 1919, giving the years of their admission to and retirement from the Union as well as any IAU functions held during their membership.

## 9. Financial Matters - Income and Expenditure 1997-1999

## TRIENNium 1997-1999

## STATEMENT OF INCOME (CHF)

	1994-96	1997	1998	1999	1997-99
<b>ADHERING ORGANIZATIONS</b>	<i>1829847</i>	<b>780730</b>	<b>659475</b>	<b>875528</b>	<i>2315733</i>
<b>SPECIAL CONTRIBUTIONS</b>	<i>208739</i>	<b>131187</b>		<b>556</b>	<i>131743</i>
<b>ICSU/UNESCO</b>	<i>64000</i>	<b>28400</b>	<b>21150</b>	<b>17490</b>	<i>67040</i>
<b>PUBLICATIONS: ROYALTIES</b>	<i>190667</i>	<b>6110</b>	<b>85546</b>	<b>66173</b>	<i>157829</i>
<b>BANK INTERESTS</b>	<i>91751</i>	<b>37351</b>	<b>15283</b>	<b>10623</b>	<i>63257</i>
<b>OTHER INCOME</b>	<i>49686</i>	<b>1038</b>	<b>20321</b>	<b>2539</b>	<i>23898</i>
<b>TOTAL INCOME</b>	<i>2434690</i>	<b>984816</b>	<b>801775</b>	<b>972909</b>	<i>2759500</i>

## TRIENNium 1997-1999

## STATEMENT OF EXPENDITURE (CHF)

	1994-96	1997	1998	1999	1997-99
<b>SCIENTIFIC ACTIVITIES</b>					
<b>General Assembly</b>					
Grants	<i>402321</i>	508978			<i>508978</i>
Commission Presidents	<i>22997</i>				
Operation	<i>23535</i>	31474	1294	6360	<i>39128</i>
<b>Sub-total General Assembly</b>	<i>448853</i>	<b>540452</b>	<b>1294</b>	<b>6360</b>	<i>548106</i>
<b>Meetings</b>					
Symposia/Colloquia	<i>567187</i>	43456	218339	278012	<i>539807</i>
Co-sponsored Meetings	<i>23650</i>		5000	10000	<i>15000</i>
Regional Meetings	<i>49123</i>		25000		<i>25000</i>
Other meetings	<i>18178</i>				
<b>Sub-total Meetings</b>	<i>658138</i>	<b>43456</b>	<b>248339</b>	<b>288012</b>	<i>579807</i>
<b>Commission &amp; WGs</b>					
Telegram Bureau (06)	<i>7270</i>	4000		4000	<i>8000</i>
Minor Planet Center (20)	<i>3372</i>		6000	6000	<i>12000</i>
Meteor Data Center (22)	<i>3100</i>		1100	2200	<i>3300</i>
Variable Star Catalogue (27)	<i>3728</i>				
EC WGs	<i>25966</i>	2506	7072	1631	<i>11209</i>
Commission WGs	<i>6325</i>	4432	683	3176	<i>8291</i>
<b>Sub-total Commission &amp; WGs</b>	<i>49761</i>	<b>10938</b>	<b>14855</b>	<b>17007</b>	<i>42800</i>
<b>Total SCIENTIFIC ACTIVITIES</b>	<i>1156752</i>	<b>594845</b>	<b>264488</b>	<b>311379</b>	<i>1170712</i>

## TRIENNium 1997-1999

## STATEMENT OF EXPENDITURE (CHF) - Ctd

	1994-96	1997	1998	1999	1997-99
<b>EDUCATIONAL ACTIVITIES</b>					
ISYA (46)	56321	32085		31314	63399
VLP/TAD (46)	23257	29591	23929	39060	92580
Astronomy Teaching (46)	2047				
Exchange of Astronomers (38)	50689	27729	12825	28124	68678
UN/ESA Workshop				2293	2293
<b>DELEGATES to other Unions</b>	<b>24747</b>	<b>15083</b>	<b>8272</b>	<b>16159</b>	<b>39514</b>
<b>DUES TO OTHER UNIONS</b>					
ICSU	33977	14542	14409	16500	45451
IERS/FAGS	21000	7500	7500	7500	22500
IUCAF	22500	7500	7500	7500	22500
<b>Total DUES TO OTHER UNIONS</b>	<b>77477</b>	<b>29542</b>	<b>29409</b>	<b>31500</b>	<b>90451</b>
<b>EXECUTIVE COMMITTEE</b>					
Executive Committee meetings	152064	82031	40239	50476	172746
Officers meetings	11867	9662	8729	2498	20889
GS expenditure	46150	22329	34305	27919	84553
Representation	2822	2363	3588	4245	10196
AGS expenditure		333			333
Archives	17656	14473	11230	7519	33222
<b>Total EXECUTIVE COMMITTEE</b>	<b>230559</b>	<b>131191</b>	<b>98091</b>	<b>92657</b>	<b>321939</b>
<b>PUBLICATIONS</b>	<b>174407</b>	<b>30084</b>	<b>59523</b>	<b>76181</b>	<b>165788</b>
<b>ADMINISTRATION/ SECRETARIAT</b>					
Salaries & Charges	441449	169886	185133	184496	539515
Training courses	6259			2946	2946
General office expenses	183401	62087	59135	50579	171801
Audit fee	5037	2035	2378	2503	6916
Bank	94198	13912	10276	3989	28177
<b>Total ADMINISTRATION/ SECRETARIAT</b>	<b>730344</b>	<b>247920</b>	<b>256922</b>	<b>244513</b>	<b>749355</b>
<b>TOTAL EXPENDITURE</b>	<b>2526600</b>	<b>1138070</b>	<b>753459</b>	<b>873180</b>	<b>2764709</b>
<b>Excess of Income over Expenditure</b>	<b>-91910</b>	<b>-153255</b>	<b>48316</b>	<b>99729</b>	<b>-5210</b>

**Appendix I****Environmental Challenges to Astronomy*****Policy Statement issued July 4, 1998, by the IAU Executive Committee***

During the 20th century, astronomy has made great progress on the most fundamental questions concerning the origin and evolution of the Universe and our place in it. Within subjects ranging from the origin and evolution of the Solar system, the formation and evolution of stars and the origin of the chemical elements, the nature and evolution of galaxies, up to the structure, origin, and evolution of the Universe itself, sound physical theories have been developed and tested against a wealth of increasingly detailed observational facts.

Except in the Solar system, astronomers cannot conduct experiments on the subjects of their studies. Thus, our understanding of the Universe is primarily based on observations of the electromagnetic and other kinds of radiation emitted by stars and galaxies. The dramatic recent progress is due to a series of observational breakthroughs, made with ground and space based observatories and closely linked to the development of cutting-edge technologies. In order to probe the diverse range of astronomical objects, observations must cover all wavelengths from radio via infrared and optical to X- and gamma-rays, some of which are only accessible from space.

The phenomena thus discovered include the most violent events known in the Universe. Yet, these objects are so far away that the signals recorded by astronomical telescopes when capturing radiation from the early phases of the Universe are vastly fainter than those familiar from everyday life. This fact makes astronomy especially vulnerable to, but also a very sensitive indicator of, environmental degradation affecting the night sky at all wavelengths.

At the threshold of the third millennium, progress in the further exploration of the depths of the universe is threatened by human activities affecting the night sky. Briefly, these adverse effects are fourfold:

1. *Pollution by scattered light from ground based light sources.*

To millions of people living in or near great cities or industrial centres, the sight of the dark night sky is unknown. Plainly visible from space, this light not only obliterates the faint signals reaching us from the Universe, it also represents the useless waste of much fossil or nuclear fuel. Thus, economic incentive and scientific interest go hand in hand in this matter. Simple measures exist to direct light where it is needed, and thus both conserve energy and keep the night sky pristine; they need to be implemented more widely. The IAU values and supports the numerous national and local initiatives taken to promote understanding and action on this issue.

2. *Interference from man-made radio noise.*

Radio astronomy has contributed several of the most fundamental discoveries of the past century. Now, however, it is under relentless and increasing pressure, above all from the communications industry, to give up the protected wavebands containing the astrophysically most important frequencies. Considering that an ordinary portable telephone, if placed on the Moon, would be one of the very brightest sources in the radio sky at its wavelength, even sideband radiation from transmissions in a permitted waveband may be fatal to astronomy. Continued efforts by the IAU and URSI (Union de Radio Science Internationale), as represented by the Inter-Union Committee on the Allocation of Frequencies for Radio

Astronomy and Space Science (IUCAF) within the International Telecommunications Union (ITU), are vital for radio astronomy to survive in the face of this competition.

3. *Space debris.*

Space debris from spacecraft and launchers has two kinds of deleterious effects on astronomy: First, it leaves luminous trails on the sky which ruin astronomical observations. Second, direct hits by spacecraft debris are a threat to the survival of scientific satellite observatories, including the International Space Station, somewhat analogous to the effects of swarms of small natural meteorites. The former effect is mainly felt by astronomers; the latter problem affects all satellites regardless of their purpose. For this reason, international efforts are under way to control the growth of space debris, which will hopefully also benefit astronomy.

4. *Technology experiments and artistic or commercial displays in space.*

Experiments continue to be proposed which would place strongly luminous objects in space, whether for technology assessment (generation and transmission of illumination or power), or for artistic or commercial purposes. Responsibly executed and carefully controlled experiments should, of course be allowed, but malfunctions may occur. Moreover, at the moment, no international regulations exist to prevent uncontrolled private and other enterprises from launching objects into space that would ruin the night sky for people of all nations, potentially for many generations: Unlike ground-based art or advertising displays, space displays respect no national sovereignty or environmental regulations. An international treaty is needed to prevent unbridled proliferation of such displays to the irreparable detriment of scientific progress in astronomy.

The IAU, therefore, urgently appeals to the nations of the world to negotiate and implement an international treaty regulating space activities that would unnecessarily endanger what is perhaps the last natural resource available to all mankind: The night sky. Clearly, nations should be free to develop potentially beneficial space technology in a controlled and responsible manner as defined by internationally recognised guidelines. The IAU urges, however, that such guidelines be defined with due regard to the protection of peaceful scientific investigation, following the models set by, e.g. the Antarctic Treaty or the international agreements on radio frequency allocations.

**Appendix II****IAU Policy Statement on Near Earth Object Research**

*Policy Statement issued July 4, 1998, by the IAU Executive Committee*

The Solar system contains a large number of bodies ranging in size from the major planets to tiny meteorites. Research over the last several decades has revealed that all major bodies of the Solar system have suffered larger or smaller impacts of bodies ranging in size from millimetres to kilometres, the best-known example of which is the abundance of craters on the Moon. Geological features on Earth show that impacts of significant size have occurred also on our own planet. The realization that such impacts occur at long, but presently poorly-known intervals has recently caused growing concern in the public, and in the press.

Research on the minor constituents of the Solar system – the minor planets or asteroids – has formed part of astronomical research for the last two centuries. The International Astronomical Union (IAU) has acted as the international focal point for this research since the foundation of the Union in 1919, in particular through its Commission on the Positions and Motions of Minor Planets, Comets, and Satellites. As part of this function, the IAU has for over 50 years operated a Minor Planet Center (MPC), currently at the Smithsonian Astrophysical Observatory (SAO; Cambridge, Mass., USA), for the collection of data and the dissemination of information concerning minor planets and, lately, comets. When continued research showed that the orbits of several minor planets crossed that of the Earth, the IAU in 1991 appointed a Working Group on Near Earth Objects (NEO) to coordinate international studies of NEOs and develop suitable strategies for detection, follow-up, and orbit prediction. As one result of this work, the international Spaceguard Foundation was formed, and a number of observational programs for the detection of NEOs have been started. The WGNEO is also active in the development of proven algorithms for long-term NEO orbit prediction and thus for assessing the distance to which NEOs may approach Earth within the next few centuries.

Currently, the number, size distribution, and orbits of individual NEOs are incompletely known from observation. Thus, the most urgent task is the detection and observation of NEOs to determine their orbits. This is an international responsibility that requires the efforts of and support for astronomers around the world. As the international organization of professional astronomers, the IAU coordinates this activity through the NEO Working Group and offers the services of the MPC for the collection and collation of new observations and computation of predictions from which follow-up observations can be made to improve our knowledge of the orbits and sizes of these objects.

It is possible that, sometime in the future, these studies may lead to the prediction of an actual impact on Earth. In such a case, this information must be promptly conveyed to the governments of the world, who may be in a position to organise countermeasures (a subject outside the mandate of the IAU). On the other hand, public announcements of potential impacts without proper verification are clearly undesirable. The IAU has therefore charged the WGNEO, in consultation with astronomers worldwide, to draft a set of recommended procedures to be followed in case minor planets and comets are discovered that lead to predictions by the MPC of potential impacts. These procedures will conform to the following general principles:

1. All information will be openly shared with astronomers and the general public world-wide.
2. The content of public statements that might alarm the public will be subject to prior scientific peer review by the IAU.
3. The IAU Officers and appropriate authorities will be consulted before such information is released to the press.

The IAU reaffirms and increases its support of the Minor Planet Center, as the international clearing-house for this research, and acknowledges the support of SAO and NASA for its operation. The IAU encourages all countries of the world to contribute to the effort of charting the NEO population and will continue to ensure that this global issue is addressed in a properly international forum.