

COMMISSION No. 46

TEACHING OF ASTRONOMY

(L'ENSEIGNEMENT DE L'ASTRONOMIE)

Report of Meetings held in Baltimore

PRESIDENT: C.Iwaniszewska

SECRETARIES: M.Gerbaldi
L.Gouguenheim

Sessions 1 and 2, August 6, 1988

BUSINESS SESSIONS

1. Report of Commission, National Reports

The President reminded the structure of the Commission, which is a Committee of the IAU Executive Committee, and has therefore different rules from other IAU Commissions. Its objective is to further development and improvement of astronomical education at all levels throughout the world. These aims are achieved by:

- a. various projects, initiated, maintained and to be developed, like the preparing of National Reports, organizing International Schools for Young Astronomers, maintaining Visiting Lecturers' Programmes in developing countries, printing the Astronomy Education Material, developing the new project of Travelling Telescope,
- b. dissemination of information on astronomy teaching at various levels, through publication of the Commission Newsletter, preparing teachers' local meetings on the occasion of IAU General Assemblies, and finally, organizing special meetings like the IAU Colloquium No.105, which took place in July 1988.

The President's Report for 1985-1988 has been approved. Twenty eight National Reports on the state of Astronomy Education in individual countries prepared by the National Representatives have been already published in Newsletter No.24, a few late ones will appear in 1989. The National Committees for Astronomy in 18 countries appointed new National Representatives to Commission 46. There are however still a few countries where either no representatives could be found, or the proposed persons were still no IAU members. The list of the present 41 National Representatives is given below.

2. New Rules for Commission Membership

According to the Rules prepared in 1973 by President Edith A.Müller and Vice President Derek McNally, the Commission was composed mainly of National Representatives, a few regular members, and consultants (not IAU members). In view however of the growing interests in the Commission activity expressed by many IAU members wishing to

join the Commission, the Assistant General Secretary Derek McNally elaborated new Membership Rules, accepted by the IAU Executive Committee. Three categories of members are introduced:

- Category 1 - IAU members nominated by National Committees or Adhering Bodies of each country, one person per country, who maintain a liaison between the Commission and the country, prepare triennial reports; in fact they are National Representatives, and they can vote on Commission and financial matters;
- Category 2 - individual IAU members showing an active interest in the development and improvement of astronomy education, having a right to vote on Commission matters except finance matters;
- Category 3 - non-IAU members invited by the Commission to serve for one term, with no voting rights; in fact they are former consultants of the Commission.

It ought to be very strongly pointed out here that the condition of remaining a Commission 46 member of every category for another term is to contribute to the work of the Commission during the triennium between the General Assemblies. Well before every General Assembly the President or Vice President should ask all members what they have done for the Commission 46, and then suggest to withdraw persons who are no longer interested. If then, even the National Representatives fail to make a contribution to the work of the Commission, they will not be accepted by the President as continuing in Category 1, even though renominated by their National Committees. Further, if a given country is not an IAU member, then astronomers from that country can become either Category 2 members (in case of individual IAU membership) or Category 3 - in case of non-IAU members. Finally, if a country becomes an IAU member, then there must exist an Adhering Body, who will have to nominate a National Representative from among IAU individual members, as Category 1 member. After some discussion the new rules have been voted and approved by the Commission.

The President then presented a list of persons, who applied for Commission membership according to the new rules. The list has been approved, so that from now on Commission 46 has a total of 134 members in 3 Categories. New Organizing Committee members have been proposed and approved.

3. Commission 46 Members for 1988-1991

President: Aage Sandqvist, Sweden,
 Vice President: Lucienne Gouguenheim, France,
 Organizing Committee: Leo Houziaux, Belgium; Syuzo Isobe, Japan;
 Cecylia Iwaniszewska, Poland; Josip Kleczek, Czechoslovakia; Jay Pasachoff, USA; John Percy, Canada; Robert R. Robbins, USA; Donat G. Wentzel, USA; Richard West, Denmark; William Zealey, Australia.

Category 1 Members (National Representatives)

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| 1. Australia: Alex Rodgers | 22. Italy: Eduardo Proverbio |
| 2. Austria: Hermann Haupt | 23. Japan: Syuzo Isobe |
| 3. Belgium: Arlette Noels | 24. Korea Rep.: Jong-Ok Woo |
| 4. Brazil: Silvio Ferraz-Mello | 25. Mexico: Silvia Torres-Peimbert |
| 5. Bulgaria: Nikolai S. Nikolov | 26. Netherlands: L.L.E. Braes |
| 6. Canada: Richard Bochonko | 27. New Zealand: Edward Budding |
| 7. Chile: Jose Maza | 28. Nigeria: Samuel Okoye |
| 8. China, Nanjing: Ke-jia Feng | 29. Norway: Jan-Erik Solheim |
| 9. China, Taipei: Chun-Shan Shen | 30. Poland: Cecylia Iwaniszewska |
| 10. Colombia: Eduardo Brieva | 31. Portugal: Jose Osorio |
| 11. Czechoslovakia: Josip Kleczek | 32. South Africa: Anthony Fairall |
| 12. Denmark: Hans J. Fogh Olsen | 33. Spain: Maria Catala-Poch |
| 13. Egypt: A. Aiad | 34. Sweden: Aage Sandqvist |
| 14. Finland: Heikki Oja | 35. Switzerland: Louis Martinet |
| 15. France: Lucienne Gouguenheim | 36. United Kingdom: David Clarke |
| 16. Germany D.R.: Helmut Zimmermann | 37. Uruguay: Julio Fernandez |
| 17. Germany F.R.: Wolfhard Schlosser | 38. USA: Jay Pasachoff |
| 18. Greece: L.N. Mavridis | 39. USSR: Edward Kononovich |
| 19. Hungary: Gabor Szecsenyi-Nagy | 40. Vatican City State: M.F. McCarthy |
| 20. India: Souriraja Ramadurai | 41. Venezuela: Nuria Calvet |
| 21. Indonesia: Bambang Hidayat | |

Category 2 Members (Regular Members)

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| 1. Agnes Acker, France | 27. Leo Houziaux, Belgium |
| 2. Henri Andriolat, France | 28. Mohammad Ilyas, Malaysia |
| 3. S.M. Razaullah Ansari, India | 29. C.D. Impey, USA |
| 4. Mihail Bacalov, Bulgaria | 30. Allan Jarrett, South Africa |
| 5. Priscilla Benson, USA | 31. Hans-Ulrich Keller, Germany F.R. |
| 6. Elvira Botez, Roumania | 32. John E. Kennedy, Canada |
| 7. Lucette Bottinelli, France | 33. Christopher Kitchin, UK |
| 8. Noah Brosch, Israel | 34. Vladimir Kourganoff, France |
| 9. William Buscombe, USA | 35. Jerzy Kreiner, Poland |
| 10. Joseph Chamberlain, USA | 36. Edwin C. Krupp, USA |
| 11. S.J. Codina-Landaberry, Brazil | 37. Maria Teresa Lago, Portugal |
| 12. Heather Couper, UK | 38. Liu Lin, China, Nanjing |
| 13. Zhen-Hua Cui, China, Nanjing | 39. Irene B. Little-Marenin, UK |
| 14. Jon Darius, UK | 40. Nicholas Lomb, Australia |
| 15. David Dupuy, USA | 41. King-Yuan Ma, China, Nanjing |
| 16. Marie-France Duval, France | 42. Walter Maciel, Brazil |
| 17. J.P. Emerson, UK | 43. Ronald Madison, UK |
| 18. M.J. Fernandez-Figueroa, Spain | 44. Julian Marsh, UK |
| 19. Richard T. Fienberg, USA | 45. Derek McNally, UK |
| 20. Julieta Fierro, Mexico | 46. Gospodin Momchev, Bulgaria |
| 21. Roberto Gallino, Italy | 47. Guy Moreels, France |
| 22. Michele Gerbaldi, France | 48. Juan Muzzio, Argentina |
| 23. Owen Gingerich, USA | 49. Wayne Osborn, USA |
| 24. Hardev Gurm, India | 50. Terry D. Oswalt, USA |
| 25. Jean-Louis Heudier, France | 51. Mazlan Othman, Malaysia |
| 26. Darrel Hoff, USA | 52. Naoki Owaki, Japan |

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| 53. Jean-Paul Parisot, France | 69. Jaromir Siroky, Czechoslovakia |
| 54. John Percy, Canada | 70. Vladimir Stefl, Czechoslovakia |
| 55. Mario Rigutti, Italy | 71. Bjorn Stenholm, Sweden |
| 56. Robert R. Robbins, USA | 72. Alexei Stoev, Bulgaria |
| 57. Leif Robinson, USA | 73. Jiri Svestka, Czechoslovakia |
| 58. Curt Roslund, Sweden | 74. Jose Rosa Taborda, Portugal |
| 59. Archie Roy, UK | 75. Alexis Troche-Boggino, Paraguay |
| 60. John Safko, USA | 76. Sylvie Vauclair, France |
| 61. Blas Sanahuja, Spain | 77. Simeon Vladimirov, Bulgaria |
| 62. P.P. Saxena, India | 78. Vladis Vujnovic, Yugoslavia |
| 63. Natcheva Sbirikova, Bulgaria | 79. Donat G. Wentzel, USA |
| 64. David G. Schleicher, USA | 80. Richard M. West, Denmark |
| 65. Thomas Schmidt, Germany F.R. | 81. Richard M. Williamon, USA |
| 66. Edward Schmitter, Nigeria | 82. William Zealey, Australia |
| 67. Daniel Schroeder, USA | 83. Michael Zeilik, USA |
| 68. Henry Shipman, USA | |

Category 3 Members (Consultants)

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| 1. Maria Luiza Aguilar, Peru | 6. Kevin P. Marshall, UK |
| 2. Oscar Alvarez, Cuba | 7. Nidia Morrell, Argentina |
| 3. Robert Duker, USA | 8. Andrei Serban, Israel |
| 4. Mary Kay Hemenway, USA | 9. Yupa Vanichai, Thailand |
| 5. Reza Hayavi M. Khajehpour, Iran | 10. Gonzalo Vicino, Uruguay |

4. Astronomy Education Material (AEM)

Since 1970 every three years Astronomy Education Materials have been published in three language groups: part A - English, part B - Slavic, part C - all other languages, offering in some cases very extensive lists of astronomical publications. In 1988 part C has been already published in Commission 46 Newsletter No.25, part A and B will appear later. A long discussion followed the report of Michele Gerbaldi on the opinions of National Representatives about the advisability of having the AEM printed. Finally, it was proposed to prepare in future only shorter, more selective lists in 4 languages: part A - English, part B - Russian, part C - French and Spanish. The selection criteria for AEM will have to be decided by the future Organizing Committee.

5. Visiting Lecturers' Programme VLP

There are now two VLP in progress, that of Peru which is still continued, and that of Paraguay which started in spring 1988. The VLP for Nigeria is delayed until the radio telescope installed there will be put into operation, and China's application for VLP is being studied by the Executive Committee. Donat G. Wentzel has been nominated as a permanent coordinator of this Commission project.

6. Planetarium Group

As he considered that some planetarium staff members are much isolated from observatories and astronomical news, Hans J.F.Olsen proposed to start getting more information about help that could be offered by the Commission. If it will be found advisable, then a Working Group on Planetarium will be formed at the next IAU General Assembly.

7. International Schools for Young Astronomers (ISYA)

The XIVth ISYA has been held in August 1986 in China, the XVth - in September 1986 in Portugal. The XVIth ISYA in Cuba for Central America announced for 1988 has been postponed till August 1989. The next applicants are: Malaysia - for South-East Asia, and Morocco - for Arabic countries, but no final decision has been taken until now. Donat Wentzel commented on the higher prestige gained by a given country when either the ISYA or the VLP have been organized there by the IAU.

8. Travelling Telescope Project (TT)

Initiated by Derek McNally and Richard West, the project of lending a small telescope to developing countries in conjunction with VLP or ISYA has been finally concluded when John Percy obtained the necessary funds through the Canadian Commission for UNESCO. The instrument has been specially brought by Percy from Canada to Baltimore, and shown to the audience. TT is a small Celestron-8 with a photometer, spectrograph, 35 mm camera, equipped with necessary manuals and instructions for carrying out simple research projects. It belongs to the IAU, applications for use should be sent to the President of Commission 46. John Percy will act as coordinator of this project.

9. IAU Colloquium No.105 "The Teaching of Astronomy"

Commission 46 had been the only IAU Commission sponsoring IAU Colloquium No.105 "The Teaching of Astronomy" held in Williamstown, Mass., on July 26-30, 1988. It was attended by 162 persons coming from 31 countries. The Scientific Committee was chaired by John Percy, the Local Committee - by Jay Pasachoff. The colloquium session programmes varied from teaching at different levels and interdisciplinary approaches, to video-films, computer programmes and planetarium activities. A special feature of the meeting has been the comparatively large attendance of participants from developing countries, hence many discussions centred on their specific difficulties, from the training of astronomers to the publishing of textbooks. The colloquium proceedings edited by J.Percy and J.Pasachoff will be published by Cambridge University Press.

10. Newsletter

John Percy has been editor and Leo Houziaux - printer and distributor of the Commission Newsletter during the last term, publishing 7 issues of about 200 pages in total. Both have been thanked for their work, which they wish to continue. The editor asked members for more cooperation, for sending educational material, especially as every Commission member has been reminded of his duty to contribute to the work of the Commission.

11. Relations with ICSU and ISY

Lucienne Gouguenheim reported on her contacts with the International Council of Scientific Unions - Committee for Teaching Science (ICSU - CTS), where she met representatives of other teaching commissions of scientific unions and exchanged valuable information. She is also acting as ICSU-CTS representative in the ICSU Committee for the International Space Year (ISY), scheduled for 1992. The major themes for ISY activities are connected with science, applications, education and public information, hence they fall within Commission 46 interests.

12. Contributed Papers

Two short contributed papers have been presented at the session. One, by Titus A.Th.Spoelstra on interference problems in radio astronomy, which should be presented also when teaching astronomy. Another, by Syuzo Isobe, on the existence of a Working Group on Teaching Astronomy in the Asian-Pacific Region, with members from Australia, China, Egypt, Indonesia, Korea Rep., Malaysia, and S.Isobe from Japan as chairman. A future exchange of teaching materials as well as astronomy teachers is planned.

Session 3, August 9, 1988
(jointly with Com.5)

DEVELOPING COUNTRIES

George A.Wilkins of Commission 5 presided the joint meeting of Commissions 5 and 46 devoted to reviewing problems of developing countries in respect to documentation and teaching, and to considering what help might be offered. John Percy gave an account of the discussion on textbooks held during IAU Colloquium No.105. He spoke about the difficulties in obtaining funds for buying books from abroad, the ways of preparing local publications, better suited to specific education conditions in a given country. A. Ratnakar brought into focus some ideas discussed at the recent IAU Colloquium No. 110 "Library and Information Services in Astronomy", related to preprints and publications distribution. Participants commented on the impor -

tance of having "Current Contents" in astronomical institutions (J. Muzzio), on a possibility of obtaining reduced rates for main astronomical journals sold to libraries (A.Sandqvist, H.J.F.Olsen), or to individual astronomers (H.Gurm, S.Okoye), on help in sending journals through twinning some countries (G.A.Wilkins), on the values of publications sent from neighbouring countries of the same language group (M.L.Aguilar).

Lucienne Gouguenheim told about the ways by which less developed countries can benefit through the ISY, which intends to produce astronomical materials for public education as well as to offer scholarships. However all these activities will be made possible only if the Space Agencies will give the necessary financial support. A discussion brought further points of immediate interest for researchers, as information on the possibility of obtaining a waiver of printing charges (I.Onuora, S.Torres-Peimbert), of obtaining free-of-charge books from retiring professionals (A.Sandqvist), of getting help at embassies when sending books to developing countries (A.Aiad), of UNESCO coupons for foreign books (E.A.Müller).

Sessions 4 and 5, August 10, 1988

A COMPARATIVE STUDY OF UNIVERSITY DEGREES

Aage Sandqvist introduced the session on astronomy teaching programmes at university level - by asking what are the benefits of the diversity in the world's educational systems? What is being done to increase the mobility of students in world regional areas? What can Commission 46 do to help students overcome barriers? Leo Houziaux mentioned the system now reigning in Western Europe, where there is a mutual recognition of Astronomy Degrees, and the programme for stimulating doctoral theses, ERASMUS, is connecting 15 institutions in 11 countries. In 1976 the number of IAU members per million inhabitants has been 4.1 for Europe and 5.1 for USA. In 1987 the corresponding numbers have been 6.2 and 7.5, respectively. David Clarke's paper dealt with the general situation in obtaining astronomy degrees in UK universities, while Michael Dworetzky told about the programme of astronomy studies at the University College in London.

The requirements for obtaining a degree in USSR have been presented in a paper of Edward Kononovich. There are three degrees in astronomy: graduation at the end of university studies, the degree of candidate of physical-mathematical sciences, and the degree of doctor of sciences. Each degree requires a preparation of thesis, presented at special meetings with oponents and referees. Alfonso Serrano spoke about the situation in Mexico, where the National Autonomous University in Mexico City is chosen by 300 000 students. A first Ph.D. programme in Astronomy is just being introduced in the country. Jay Pasachoff introduced the complex situation in USA,

where the majority of students attend for four years colleges, and then only 10 % go for graduate studies at universities. Although some universities are rated very high, no correlation has been found between a successful career and the place of study.

The situation in Uruguay has been reviewed by Gonzalo Tancredi, with an emphasis on the revival of research and teaching that took place in that country in 1985. Hardev Gurm told about the new programme of university studies now being introduced in India. Only two Indian universities, that in Patiala and Osmania University in Hyderabad, conduct now graduate studies in astronomy. However the situation will improve in the near future, as it has been mentioned by Souriraja Ramadurai, with the opening in 1989 of an Inter-University Centre for Astronomy and Astrophysics on the campus of the University of Poona, where M.Sc and Ph.D. programmes as well as other advanced workshops will be conducted. A discussion then centred on the question of diversity of curriculae, which ought to be related to the specific situation in a given country. Uruguay and USSR proposed to put more emphasis on the importance of including astronomy in secondary school programmes, special attention being paid to the possibilities of introducing astronomy as a separate subject. Such a situation exists now only in 4 countries in the world: Germany D.R., Greece, USSR and Uruguay.

Since this had been the last session of Commission 46 during the XXth IAU General Assembly, the President thanked warmly all members of the Organizing Committee, all organizers of the IAU Colloquium No.105, and finally, the director and staff of the Institute of Astronomy in Torun (Poland), where she is working, for their help with the sending of her numerous letters and countless telexes during the past three years.

Special Session, August 1, 1988

TEACHERS' MEETING

About 80 schoolteachers, planetarium instructors, science-centre specialists together with 20 astronomers attended the traditional meeting with local teachers on the occasion of IAU General Assemblies. The meeting has been organized by Harry Shipman with the cooperation of the Division of Continuing Education of the University of Delaware. Information on project STAR ("Science Teaching through its Astronomical Roots") - a new programme for highschool astronomy carried on at the Harvard-Smithsonian Centre for Astrophysics met with a keen interest. Other lectures have been devoted to the Supernova 1987, new conceptions of the Solar System, observations of solar eclipses, and finally, about the available astronomy teaching resources.