

COMMISSION 46: ASTRONOMY EDUCATION AND DEVELOPMENT

(ENSEIGNEMENT DE L'ASTRONOMIE)

PRESIDENT: Syuzo Isobe

VICE-PRESIDENT: Jay Pasachoff

ORGANIZING COMMITTEE: Alan H. Batten, Barrie Jones, Michelle Gerbaldi, Edward Guinan, Derek McNally, Charles Tolbert, Silvia Torres-Peimbert, Don Wentzel.

1. Minutes from IAU Commission 46 at the 2003 IAU General Assembly Sydney July, 2003

The President, Syuzo Isobe, welcomed everyone and said that sadly A E Troche-Boggino (Paraguay) had died and asked all to rise for a minute in acknowledgment of his past efforts in astronomy education and development in his country. Reports from Program Groups

We heard a series of Reports from the 9 Program Groups.

1.1. Advance Development, ADPG (since renamed Program Group for the World-wide Development of Astronomy, WWDA)

J. Hearnshaw spoke on behalf of A. Batten, and added that the aim of the ADPG was to identify non-IAU countries for a visit, followed by a report to the IAU on whether the country was suitable for the Teaching for Astronomy Development Program Group (since renamed Teaching Astronomy for Development).

1.2. Teaching for Astronomy Development, TAD (since renamed Teaching Astronomy for Development)

J. White, reporting for D. Wentzel, said that the purpose of TAD was to assist countries with little existing astronomy to enhance its infrastructure for astronomy education and research at tertiary level.

The methods used were to:

- assist with the creation of university level astronomy courses,
- provide equipment and expertise for educationally based research programs,
- provide travel funds for graduate students, scientists and foreign experts
- provide general support for science (astronomy) education.

Activities during the period were in:

- Central America - several of the country's universities had been engaged,

- Vietnam - now had a mature program,
- Morocco - now had a second university participant,
- Philippines - had a new program with PAGASA, but has a slightly different focus in that it was more Education/Public Outreach oriented, and
- Nigeria - where there was potential activity in the new center for Astronomy and Atmospheric Science. The contact there was Dr A. A. Ubachukwu.

The Caribbean was another potential target for TAD. Other countries mentioned were Zambia and Namibia, at which point J. Hearnshaw suggested an additional meeting, described below.

The suggested TAD Program Group for 2003 - 2006 was: James C. White II (Chair, USA), Donat G. Wentzel (Vice-Chair, USA, Armando Arellano Ferro (Mexico), David Clark (Scotland), Nidia Morrell (Argentina). John Percy (Canada), Nguyen Quang Rieu (France), Cynthia Celebre (Philippines), Khalil Chamcham (Morocco), Nguyen Dinh Huan (Viet Nam), Jorge Paez (Costa Rica), and John Hearnshaw (New Zealand, WWDA Chair, *ex officio*).

J. White concluded by saying that there was a need for a more flexible approach: to get research development you needed to educate at lower levels and in view of Hearnshaw's request for a meeting that there should be *ex-officio* representation between PGs 1 & 2.

1.3. International School for Young Astronomers, ISYA.

The ISYA has lectures and practical work, the ratio of which depended on the facilities of the host institute. Another important aspect of the school was that it was often the first opportunity students had of addressing their peers, and others, on their research in English, which was frequently not their mother tongue. The school also offered the opportunity for the development of networks between students and their teachers/supervisors. The school was open to students at MSc level and upwards. M. Gerbaldi reported that since the last General Assembly (Manchester 2000) there had been two ISYA's:

- Thailand - Chiang Mai January 3 - 22, 2001
- Argentina - CASLEO, August 12 - 30, 2002.

There had been problems with the latter since it occurred at the time of Argentina's financial crisis and funding had to be found at short notice. She wanted to express her gratitude to the IAU for assisting in getting funding from UNESCO in Paris.

Future ISYA's had been submitted to the IAU Executive Committee for:

- Morocco in 2004. It is proposed that it be held at al Akhawayn University, Ifrane, in July.
- Mexico in 2005. It is proposed that it be held at INAOE (Instituto Nacional de Astrofisica Optico y Electronica) Puebla in July/August.

M Gerbaldi would continue as chair for the ISYA for 2003 - 2006 with E Guinan as vice-chair.

1.4. Exchange of Astronomers

C. Tolbert reported for R. West. Since January 2001 there had been 14 requests for funding, all but one of which had been granted. Two additional requests are under consideration. The average award is a little under US\$2 000 per visit and is normally only for air fare to and from the host institution. All local subsistence expenses are to be covered by the host institution.

Originating countries include India, Korea, Nigeria, Egypt, San Salvador, Argentina, Russia, Australia, and others. Host countries include China, USA, Mexico, Canada, India in addition to several European countries.

Visits are for three months or more and must have the written support of both host and home institutes. Application forms are on the IAU web site.

C. Tolbert is the chair with J. Percy as vice-chair.

1.5. Collaborative Group

S. Isobe (Chair) reported that there had been active collaborations with both the OECD Global Science Forum (the OECD, Organization for Economic Co-operation and Development, is an international organization based in Paris) and a United Nations Conference on the Exploration and Peaceful Uses of Outer Space, UNISPACE III, (sponsored by the United Nations Office for Outer Space Affairs). All present received hard-copy summaries of these activities. At the latter, there was an emphasis on capacity building. They are in the final stages of preparing their report to be presented to the UN in 2004/5.

1.6. Newsletter

In the absence of Barrie Jones, J. Percy delivered a short report. There had been two newsletters per year. These were 'posted' on the Commission 46's home page and sent to others. There was a request that fewer copies be mailed as it was becoming costly to do so. During discussions afterwards there was a request that the newsletter be made known to other organizations such as planetaria, media, science centers, and relevant educators.

IAU members in general don't read the newsletter and J Percy said that the IAU was looking into improving communications within the IAU and maybe C46 could extend distribution of the newsletter by 'piggy-backing' onto this.

1.7. National Liaisons

J. Pasachoff suggested that a reminder be sent out at this and at future General Assemblies that C46 is happening! There was a list of national representatives on the IAU home page and he reported that this was continually up-dated and that national representatives who have not already done so should be encouraged/reminded to submit a report of activities to C46. These reports are published in the Newsletter.

1.8. Public Education at the Times of Solar Eclipses

J. Pasachoff reported that before an eclipse there was an opportunity to exploit the media to promote astronomy and to use these events for educational purposes. It was also necessary for the IAU to raise the awareness levels of the need for safe viewing of eclipses.

There is now a web site: <http://www.eclipses.info> that contains virtually all details relating to eclipses. There was discussion on forthcoming eclipses, in particular

the partial eclipse of April 19, 2004, which could serve as a promotional precursor to the transit of Venus later in the year.

1.9. Exchange of Books and Journals

Several organizations provide free books and journals to astronomically-developing countries and include:

- the IAU,
- the American Astronomical Society, AAS,
- the Astronomical Society of the Pacific, ASP,
- the American Association of Variable Star Observers, AAVSO,
- the Royal Astronomical Society of Canada, RASC,
- Sky & Telescope, and
- various other societies, institutions and individuals.

Where possible, the recipient countries are selected as those being involved in programs such as TAD. There are challenges for this program including:

- the high cost of postage,
- getting the material to the appropriate user,
- making sure that the material supplied meets local needs.

There was some discussion on this and it was generally felt that one way to address these problems was to give electronic access to journals and magazines through the www. There was also a need for new people to run this program. Pending Business

The proposal of the new Commission 46 officers—J Pasachoff (USA), President, and Barrie Jones (UK) or N Morrell (Argentina), Vice-President, and Program Group chairs was distributed and was approved unanimously after a brief discussion. Ultimately, Barrie Jones became Vice-President.

Another proposal was made available to those present concerning a resolution to be submitted to the IAU executive relating to the role of astronomy in the schools curriculum and to its teaching in schools. This was briefly discussed and approved unanimously.

It has become a tradition that there be a teachers workshop held in connection with the IAU General Assemblies. Sydney 2003 will be no exception and a workshop will be held on Saturday, July 26, 2003, in the Powerhouse Museum. The first such workshop was held thirty years ago at the first General Assembly in Sydney. Several Commission 46 astronomers will be presenting a workshop and members are referred to the article on p2 of the "Magellanic Times" of Friday July 18, 2003 for further details.

J. Percy also reminded those present of Special Session 4 on Thursday July 24, 2003, and Friday, July 25, 2003. It focuses on "Effective Teaching and Learning of Astronomy."

At the second session, the budget for 2003 - 2006 was presented and J Hearnshaw asked for a more detailed breakdown as he intended the ADPG to become more active in the future. There was CHF 10 000 allocated for "other" and he wanted to know if

that included ADPG. The president answered in the affirmative. There was CHF30 000 available for activities other than TAD, ISYA and the Exchange of Astronomers.

The President then gave some background to the resolution that was passed at the previous meeting. He explained that it was useful for some countries, trying to implement educational change in their countries, to have the support of the IAU

1.10. Astronomy and Astrology

The matter of whether the debate on astrology/astronomy should be included generated considerable discussion. Dr Kochar said that there was a backlash to astronomy and a rise of astrology. He felt that a better educational structure would broaden the astronomical base and thus have a wider impact.

J. Pasachoff felt that the IAU should take a more pro-active role in this and thus "combat" astrology. In the ensuing discussions it was mentioned that astrology was a belief system and as such hard to "fight". Dr Kochar said that astrology also had potent social and cultural contexts. C. Rijdsdijk agreed and added that there should be a distinction between astrology in particular and pseudo-science in general. Since astrology is a belief system for many people and because it has significant cultural connotations, he thinks it needs to be treated more carefully than and differently from other pseudo-sciences.

S. Isobe said that the issue was complex and that time constraints meant that discussion had to be curtailed. He suggested that further comments be e-mailed to J. Pasachoff.

1.11. Membership, Discussion, Conference, Planetaria

J. Pasachoff asked for clarity on the issue of membership of C46 - was it only open to national representatives or could others join? Dr Kochar felt that there was no harm in recruiting IAU members who were active in the field. There appeared to be general agreement on this.

Further investigation subsequent to the meeting revealed that all members of Program Groups were members of Commission 46.

In the discussion on the chair of the Books and Journals Program Group it was agreed that there was a difference between books and journals and this would further impact on what should be done in the Program Group. Since there was uncertainty on the role of the chair and that there was no volunteer, S Isobe offered to look after the Program Group until clarity was obtained, after which a volunteer would be sought.

C. Rijdsdijk asked whether or not it was possible for the IAU to give some sort of approval to astronomical web sites since there were many that were bad. There was some discussion on this and it was decided that the IAU did not have right or authority to do this.

M-K Hemenway announced that there was a conference on "Communicating Astronomy to the Public." It was to be held in Washington from October 1-3, 2003. Details on <http://www.nrao.edu/ccap>.

A Fairall felt that there should be a closer link between the IAU and the Planetaria since many planetarium directors had media backgrounds rather than astronomical ones. After some discussion it was agreed that he would write an article on the matter and that it would be published in the IAU Commission 46 newsletter and the International Planetarium Society journal, *The Planetarian*.

Before the two final presentations were delivered, J. Pasachoff, the incoming president of C46, thanked S Isobe, the outgoing president, for his support in the past and looked forward to his support in the future.

The minutes for both sections were kept by Case Rijdsdijk (South Africa), case@sao.ac.za.

1.12. Astronomy for Developing Countries

There was a suggestion that the ADPG group (since renamed Program Group for the World-wide Development of Astronomy, WWDA) have a one day session at the next GA in Prague, 2006 to discuss:

- how (astronomically) advanced countries could help developing countries,
- how developing countries will be helped.

The discussion of astronomy for developing countries then began. On behalf of P. Wehinger of the Steward Observatory, University of Arizona (USA), Pasachoff described the possibility of providing 6.5-m spin-cast mirrors at a cost that is relatively low for that size category. He described the high spatial resolution that has already been obtained with such mirrors.

A Ferro then presented "Developing Astronomy in Developing Countries." Commission 46 had a long history of supporting the growth of astronomy in developing countries. Previous activities included presenting courses on astronomy, training scientists and students, organizing the loan of equipment and financial support. However the goal should be to develop local professional working groups. Some problems were outlined: these included a lack of continuity, limited time for lecturers, and the absence of a local infrastructure to support students. Ferro felt that we are failing to capture students and keep them, and so to obtain a solid base to build on. The IAU, as an international astronomical body, should set as a goal the achievement of a local professional group working "at home."

Ferro proposed that the existing Program Groups (TAD, ISYA, etc.) be used to select good students, and to find an established regional host institution where the student could be supervised for 1 - 2 years and then return to his home country. There were local "gurus" who could find the money to do this and who knew people who were prepared to help in this endeavor. It is hoped that this same person would have sufficient local influence to make sure that the student had a job to go into when he or she returned home.

The process would take time, but there were places where this had worked or was working: Mexico and India. It had taken many years but these countries now had sustainable astronomy groups. Ferro was asking for Commission 46 to target a country and to support it financially for a period of, say, 5 years. During a brief discussion on this matter, it was generally felt that the problem was in getting the students to return to their home countries. It was the experience of those from developing countries that, even if contracts were signed, these students would eventually leave to return to their training or other institutions.

President Isobe said that he looked forward to seeing every one in Prague.

1.13. Report of meeting of IAU Commission 46 members interested in the role of the Advance Development Program Group (ADPG, now WWDA) and its relation to Teaching Astronomy for Development (TAD)

The meeting was called by John Hearnshaw, the incoming chair of ADPG. The following people participated: Elizabeth Alvarez del Castillo (USA), Tony Fairall (S Africa), Michele Gerbaldi (France), Richard Gray (USA), John Hearnshaw (New Zealand), Mary Kay Hemenway (USA), Syuzo Isobe (Japan), Yoshihide Kozai (Japan), Derek McNally (UK), Jose Osorio (Portugal), John Percy (Canada), Case Rijdsdijk (South Africa), Silvia Torres-Peimbert (Mexico), Jay White (USA).

ADPG (now WWDA) membership

John Hearnshaw outlined the current membership of ADPG over the last triennium. The group was chaired by Alan Batten (Canada), who had decided to relinquish the chair from 2003. Other members have been Athem Al Sabti (UK/Iraq), Gray (USA), Hearnshaw (NZ), Hemenway (USA), Kozai (Japan), Hakim Malasan (Indonesia), Peter Martinez (South Africa), McNally (UK), Don Wentzel (USA). Alex Troche-Boggino (Paraguay), died during the past triennium. Hearnshaw has been nominated as new chair from July 2003.

McNally indicated his wish to step down from ADPG membership from henceforth. Hearnshaw noted this, together with the passing of Troche-Boggino, brought the membership of ADPG (now WWDA) from 11 to 9. Isobe pointed out that there were no limits on membership. Hearnshaw suggested appointing additional members to achieve a wider geographical coverage and possibly also wider distribution of expertise within astronomy. Hearnshaw suggested approaching Jayant Narlikar (India) to benefit from his wide experience in directing IUCAA in India. Several other names were suggested, and subsequently J. Fierro (Mexico) was approached and she accepted to become a member of ADPG, to replace the loss of Troche-Boggino in Latin America.

It was proposed that Jay White, as incoming chair of TAD (Teaching for Astronomy Development, now Teaching Astronomy for Development), should serve *ex officio* on ADPG (now WWDA) and conversely Hearnshaw serve *ex officio* on TAD. These proposals were accepted without objections.

Alan Batten said he would be willing to continue to serve on ADPG (now WWDA) should his continued membership be welcome. Hearnshaw said his wide experience in the past work of the group made Batten's continuing membership very desirable, and would help continuity of the group's work.

The total membership of the group could, as a result of these recommendations, go up to 13, if all those suggested agree to serve.

Role of ADPG (now WWDA) and relationship to TAD

Hearnshaw outlined what he perceived to be the role of ADPG (now WWDA). This was to visit countries with some astronomical expertise at tertiary (i.e., post high school) level, which were probably not IAU member states, but which would welcome some development of their capabilities in teaching and/or research in astronomy. As a result of making initial contact and paying these countries, a visit at the institutions with at least one astronomer, a report would be written for the Commission 46 president and sent to the IAU Executive Committee. If the conditions were deemed favorable, then follow-up work by TAD or other program groups of Comm. 46 may be appropriate.

A longer term goal for ADPG in partnership with TAD could be to explore the possibilities of setting up a third-world institute for astronomy in a developing country, or to have a number of nodes to such an institute distributed through several geograph-

ical locations. The ICTP in Trieste could be a model. Hearnshaw pointed out that Narlikar had proposed a Third-World Astronomy Network (TWAN) several years ago, and although funding for this concept had been sought through Alan Batten (past chair of ADPG) nothing had come of this idea so far. It may be worth pursuing further.

In the past Batten, as ADGP chair, had visited a number of countries, such as Nigeria, Honduras, Vietnam, etc. He had also organized meetings on astronomy in developing countries at the IAU General Assemblies in Kyoto (1997) and Manchester (2000).

Possible countries that could receive the attention of ADPG

TAD were already active in, or proposing to be active in several countries in the next triennium, including the Philippines, Morocco, Vietnam, Central America (not Belize) and possibly Nigeria. Hearnshaw suggested that appropriate countries for ADPG might be non-IAU member states with one or more active astronomers. The following countries were briefly suggested as worthy of attention:

Europe: Albania; Middle East: Iraq (not immediately), Jordan; Africa: Mauritius, Zambia, Namibia, Kenya, Zimbabwe (not immediately), Angola, Mozambique; Asia: Mongolia, Sri Lanka; Caribbean: Cuba, Trinidad; Latin America: Paraguay. Those countries listed as not immediately would need greater political stability before ADPG could look at them.

It was suggested that ADPG should aim to undertake about one visit and report annually. A visit could comprise a trip to more than one country in a given region. It was noted that a number of countries in Africa might be receptive to ADPG visits, and the importance of Peter Martinez being on the ADPG was noted.

Existing programs in astronomical development; proposal to collect information and establish a website

Several existing programs to develop astronomy in Africa were already underway, including the African Institute for Space Sciences (AISS) and the National Astrophysics and Space Science Program. The role of the UN Office of Outer Space Affairs (Hans Haubold, Vienna) was also discussed.

As a result of existing initiatives, it was clear that information gathering by ADPG would be very important, before any effective program of visits could or should be initiated. It was agreed that information on existing programs be collected, and initial research on potential countries for further attention by ADPG be gathered. A proposal was made that an ADPG (now WWDA) website be established once this information was collected and collated, so it is available for wider distribution.

Jay Pasachoff

Incoming President of the Commission