COMMISSION 46
ASTRONOMY EDUCATION AND DEVELOPMENT
Education et Développement de l'Astronomie

Newsletter 56 – March 2002

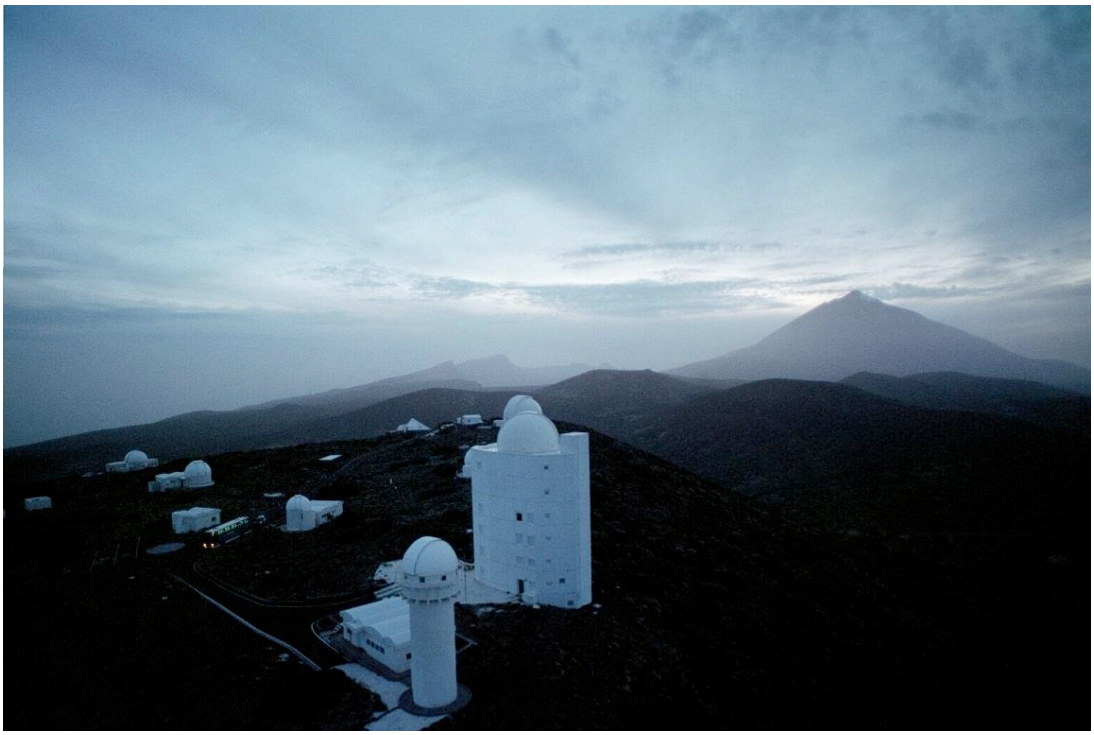
Commission 46 seeks to further the development and improvement of astronomical education at all levels throughout the world.

Contributions to this newsletter are gratefully received at any time.

PLEASE WOULD NATIONAL LIAISONS
DISTRIBUTE THIS NEWSLETTER
IN THEIR COUNTRIES

This newsletter is also available at the following website
http://physics.open.ac.uk/IAU46

CONTENTS



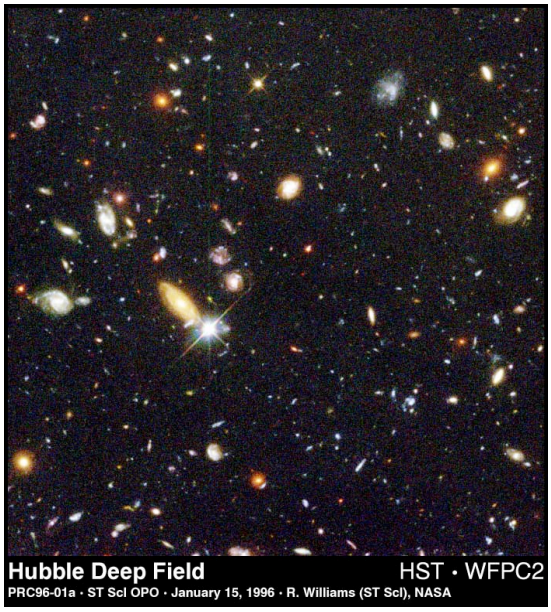
Teide Observatory, Tenerife, with Mount Teide in the background
(see 'Communicating astronomy') (photo Jay Pasachoff)

EDITORIAL

In 'Astronomers respond to claims that the Universe is young' John Percy reports one way in which the astronomical community is combating misinformation. There's a lot of it about (misinformation that is). In the UK in mid-March a big story sprang from the news that a school in Gateshead (north-east England) was teaching the Genesis account of creation with equal status to scientific accounts of cosmology and the evolution of species. My North American colleagues will give a world-weary groan at this point, so familiar are they with this situation. But in the UK we have not been so used to creationism in schools grabbing the headlines.

What makes it rather surprising is that the school concerned is one of the recently created city technology colleges, centres of excellence for the teaching of technology. OK, belief in creationism won't lead immediately to bridges falling down and computer software crashing even more than it does already, but by denying the power of science to increase our understanding of the nature of the physical world, even technology would ultimately be degraded. In any case, creationism is just one of many ill-founded beliefs, and as well as doing science no favours I think it does religion no favours either.

The initial reaction of scientists here was one of public outrage, but this might not be effective – it might well give the impression that science merely has a different but no better dogma. We might have expected a lead from Government, but the UK Prime Minister's response was, in effect, that this was a good school producing good exam results. We have some way to go.



So, were all these created just 6006 years ago?

There is no message from the President in this issue – Syuzo Isobe is unwell, and on behalf of all of the members of Commission 46 I wish him a speedy and full recovery. Our Past-president has kindly provided a message instead.

The next edition of the Newsletter will be in October 2002. The deadline for the receipt of material is Friday 4 October 2002. Contributions can be sent as emails to me, either in the body of the email or as editable attachments e.g. Word, LaTeX. Illustrations should be in a common format – JPEG, GIF, TIFF – but individual emails with attachments should not exceed one megabyte. Material can also be sent to me by mail or fax.

Barrie W Jones
(for contact details see 'Officers & Organising Committee of Commission 46')

MESSAGE FROM THE PAST-PRESIDENT

I am sorry to say that our President Professor Syuzo Isobe has been ill and therefore will not be able to address you in this issue of our Newsletter. We are sure he will soon be up and active as usual We all wish him a good recovery.

Presently I am head of outreach programs for Mexico's National University. I run two science centers and a large group of informal education activities, which include a magazine, several book collections and teacher training.

I would like to tell you about an archeoastronomy activity we developed. One of the science centers is close to a large plot of land devoid of any construction, a rare privilege in crowded Mexico City. We built a large sandbox, partially covered with a roof of palm leaves. Amongst the ash, lava, and sand we recreated a pre-hispanic settlement, including pottery, a grave, jewelry, stone tools, and cooking utensils. Students are supposed to unearth the objects and study them according to age group. This is a four-day workshop, which includes a visit to Cuicuilco, a nearby site, and stargazing. This activity is particularly interesting for local people because they sense a feeling of how the great cultures that lived in our country before us studied the skies, oriented their pyramids accordingly, designed their calendar, and predicted eclipses, by observing the paths of the Sun and Moon.

Children entering the area of excavation

I wrote a book on the astronomy of Mexico for middle school children. It includes a chapter on planetary nebulae which is a subject where several local astronomers have excelled, and another on archeoastronomy, that makes it a good after-workshop book. At a museum we make people comfortable or exited about science, but it is important to have teaching materials available, so that eager students can continue their inquisitive strive.

I strongly encourage activities that have to do with local cultures. Global change works against diversity, yet diversity has proven to be very important for evolution. Therefore, I believe that developing nations should increase their public understanding of science and include local traditions and art forms when possible.

Julieta Fierro
(for contact details see 'Officers & Organising Committee of Commission 46')

AN ASTEROID NAMED AFTER OUR PRESIDENT

There is now an asteroid called 'Isobe', named after our President Syuzo Isobe. This happened during the International Workshop on 'International Collaboration and Coordination of NEO Observers and Orbital Computers' held in Kurashiki, Japan, in the last week of October 2001. Glo (Eleanor Helin of JPL) kindly prepared the case and Isobe has received a panel including a picture of the asteroid at its discovery.

In the past, he has refused to have his name put to an asteroid because "I know there are many stupid namings and also some discoverers use the right of naming for their private benefit. (Recently there was an activity to sell the right, but fortunately IAU stopped that activity because of our quick response.) However, at this time my old friend, Glo, gave me it because of my contribution to building two telescopes specifically dedicated for NEO and space debris detection, and therefore I accepted her proposal with my great pleasure."

In connection with this, Isobe reports that "Our 1 metre telescope will be ready to observe within this year and will produce much NEO data next year. Also, the English version of our educational software to detect asteroids from our data will be ready soon. I talked about this software during the IAU GA in Manchester. Just wait a little more."

Barrie W Jones
(for contact details see 'Officers & Organising Committee of Commission 46')

ASTRONOMY EDUCATION REVIEW – A WEB-BASED JOURNAL

A web-based journal, the 'Astronomy Education Review', has been launched under the aegis of the US National Optical Astronomy Observatories and the Astronomical Society of the Pacific. An opening editorial, written by Sidney Wolff of the former and Andrew Fraknoi of the latter, is available with the rest of the content at http://aer.noao.edu .

The editorial explains that in addition to articles on astronomy education research, it will include "research articles and applications of that research to the real world of teaching; short reports on innovations in all areas of astronomy education; annotated resource guides in all branches of education and outreach; brief announcements of opportunities (whether they are meetings, funding sources, employment, or cooperative projects); opinion pieces, news, and discussion". Book reviews will also appear.

I will be writing something to describe the IAU Commission on Astronomy Education and Development and our own newsletter to the AER audience.

In addition to the editors, Sidney Wolff and Andrew Fraknoi, the Editorial Board includes

David H Bruning, Department of Physics, University of Wisconsin, Kenosha
Isabel Hawkins, Space Sciences Lab, University of California, Berkeley
Mary Kay Hemenway, Department of Astronomy, University of Texas
Chris D Impey, Steward Observatory, University of Arizona
Robert D Mathieu, Department of Astronomy, University of Wisconsin, Madison
R Bruce Partridge, Department of Physics, Haverford College
John R Percy, Department of Astronomy, Erindale College, University of Toronto
Harry L Shipman, Department of Physics and Astronomy University of Delaware
Timothy F Slater, Steward Observatory, University of Arizona
Michael Zeilik, Department of Physics and Astronomy, University of New Mexico.

Hemenway, Partridge, and Shipman are past or present Education Officers of the American Astronomical Society. Percy, of course, is a Past-president of IAU Commission 46. Slater specializes in astronomy education research. I have been asked to serve on an advisory panel.

The editors welcome submissions to aer@noao.edu. Guidelines appear on the Web site.

Jay M Pasachoff, United States National Liaison to Commission 46
(for contact details see 'Officers & Organising Committee of Commission 46')

WHY ASTRONOMY IS USEFUL (MORE)

I have read the October 2001 newsletter of IAU Commission 46, especially (1) John Percy's list of reasons why astronomy is useful and (2) the proposed resolution on why astronomy should be taught in schools. The OC of C46 has requested feedback on these items, and here are my thoughts.

One topic that I did not see specifically listed is that astronomy by its nature requires observations worldwide and thus fosters international cooperation.

One can add that international efforts also encourage the free exchange of information. Perhaps one should also include in this the fact that observations over decades, or even centuries, are sometimes required and astronomy therefore links generations and cultures of different times.

Another topic that may be worth including in the list of reasons why astronomy is useful, perhaps under the practical applications, is that astronomical knowledge (especially in Solar System astronomy) is important as humankind explores and begins to colonize space.

Wayne Osborn
Physics Department, Central Michigan University, Mount Pleasant, MI 48859, USA
osborn@leon.phy.cmich.edu

ASTRONOMERS RESPOND TO CLAIMS THAT THE UNIVERSE IS YOUNG

Material for teachers about how we know the age of the Universe is now on line.

In several US states there have been demands that discussions of the Big Bang and the vast age of the cosmos be excluded from science curricula in K-12 classrooms. In response, the Astronomy Education Board of the American Astronomical Society (AAS) has put together an article for teachers on how astronomers know that the Universe is old and that it changes with time.

The illustrated article has been posted on the Web at
http://www.astrosociety.org/education/publications/tnl/56/

It is a special issue of 'The Universe in the Classroom', a newsletter on teaching astronomy in grades 3-12, published by the Astronomical Society of the Pacific.

The article explains the evidence showing that we live in a Universe that is between 10 billion and 15 billion years old and that both the Universe and its contents undergo evolutionary change. It is designed to help teachers explain these ideas to their classes and concerned community members. A list of written and web resources is also included.

The article grew out of a formal statement on behalf of the astronomical community issued by the Council of the AAS in 2000, when the Kansas State Board of Education in 1999 adopted state standards that eliminated both evolution and Big Bang cosmology. While those standards have now been repealed, following the election of new Board of Education members, the scientific perspective continues to be questioned in states and communities around the US. Both the AAS Council, and the Society's Astronomy Education Board feel that astronomers have an obligation to assist teachers in sorting out the evidence supporting our modern view of an ancient universe.

John R. Percy
Erindale College, University of Toronto, Mississauga, Ontario, Canada L5L 1C6
jpercy@erin.utoronto.ca

REPORT FROM THE PROGRAM GROUP 'EXCHANGE OF ASTRONOMERS'

During the period since August 2000 to February 2002, the following seven grants have been provided:

- Chen Li (Shanghai Observatory, PR China) to Dominion Astrophysical Observatory, Victoria, Canada, Oct 2000-Feb 2001, $900
- Rupinder Brar (Queen's University, Kingston, Canada) to National Centre for Radio Astrophysics, Pune, India, 1 June-31Aug 2000, $1870
- Carlos Valotto (Observatorio Astronomico, Cordoba, Argentina) to Cornell University, USA, 5 March 2001-28 Feb 2003, $790.70
- Badie A Korany (Helwan Observatory, Egypt) to Astrophysikalisches Institut Potsdam, Germany, April 2001-June 2001, $1000
- Anyaegbunam A Ubachukwu (University of Nigeria) to Inter-University Centre for Astronomy and Astrophysics, Pune, India, 28 June-29 Sept, 2001: $1575
- Ilsoon Park (Sejong University Observatory, Sejong, Korea) to Louisiana State University, USA, Aug 2001, $530 (one way)
- J Javaraiah (Indian Institute of Astrophysics, Bangalore, India) to Observatoire de la Cote d'Azur, Grasse, France, 1 April-31 May 2002, $1200

A certain decline of the number of applications was noted, especially in the second half of 2001. However, more were received in early 2002 and there are at this moment five additional cases at different stages of preparation or evaluation.

It is noted that several recent cases are concerned with stays shorter than the stipulated three months. Moreover, some applications were received in connection with intended observing stays and were thus incompatible with the current rules. In view of these trends, and also on the background of greatly improved communication facilities between geographically distant institutions, it may be useful to re-discuss the rules for this IAU programme in order to ensure its continued efficiency.

Richard M. West and Charles R. Tolbert
ESO Education and Public Relations Department, Karl-Schwarzschild-Strasse 2, D-85748 Garching, Germany
rwest@eso.org

A NOTE FROM THE PROGRAM GROUP 'PUBLIC EDUCATION AT THE TIMES OF SOLAR ECLIPSES'

We maintain a Web page at http://www.eclipses.info that provides information on forthcoming solar eclipses, including not only maps but also how to observe eclipses safely. There are also links to other Web pages and descriptions of past and current eclipse expeditions.

Members of the Program Group are Julieta Fierro (Mexico), Ralph Chou (Canada, an expert on eye safety), and Jay Pasachoff (USA). One link at the site is to an explanation of shadow bands by Barrie Jones (UK), editor of this Newsletter.

Jay M Pasachoff, United States National Liaison to Commission 46
(for contact details see 'Officers & Organising Committee of Commission 46')

NEWS OF MEETINGS

COSPAR/IAU WORKSHOP ON X-RAY ASTRONOMY (DECEMBER 2001)

Two IAU Commission 46 Program Groups – Collaborative Programs and the International School for Young Astronomers – helped plan the COSPAR/IAU workshop on X-ray astronomy that took place at INPE in Brazil in December 2001. Judging both by the on-the-spot impressions of lecturers and the remarks of students, and by the evaluation questionnaires, it was a great success.

In the event we had 24 students – just short of our target of 25 – from Argentina, Brazil, Mexico, Chile, and Bolivia, but predominantly from the first three countries. The selection panel consisted of Braga (Brazil), Machado (Argentina), Page (Mexico), Reisenegger (Chile) and myself. The students ranged from university faculty, post-docs, graduates and even a few final-year undergraduates, which meant there was also a range of scientific maturity, but generally they were of high ability.

The time was divided almost equally between lectures and practical computer sessions, in which each student carried out a project related to their research, and intended to be the basis for further work when they returned to their home institute or university. Each was assigned a scientific supervisor for the period of the workshop, and the final activity was a short poster session based on their work. Early next year a website will be set up by a group of Argentinian students where the posters can be viewed.

The demands of this workshop on the host institute and on the lecturers should not be undervalued. INPE had to set up labs containing 24 good performance PCs with LINUX operating systems and a good network. The work of Joao Braga and Thyrso Villela and their helpers before and during the meeting was crucial, as was that of Keith Arnaud, Christian Erd, Carlos Gabriel and Randall Smith, who set up the Chandra and XMM operating systems. The first day of the computer classes showed that we were making huge demands on the INPE network, and the computers were rapidly reconfigured to reduce this. The other staff members were Francisco Jablonski, Ben Maughan, Mariano Mendez, Trevor Ponman and myself. Everyone took on the job of supervising students, and almost everyone (that really means except me) was pretty continuously involved in giving computing advice. Now it is over, I am glad we did not take on more students and I note that keeping things going was a full-time job for this quite large staff group.

I am particularly grateful to all those mentioned in the last paragraph for the enthusiastic, resourceful and dedicated way in which they approached this workshop, which I believe will have broadened the research horizons of many of the students who took part. Everyone, staff and students alike, worked extraordinarily hard and it was difficult to extract them from INPE in the evenings (the bus leaving time got later and later as time went on).

Besides those mentioned above, I am grateful to the selection panel for their efforts, and to Nick White and Wim Hermsen for valuable advice. In addition to our core funding from COSPAR and IAU, we received contributions in kind from ESA and NASA and a grant from FAPESP (Brazil). The administrative arrangements were made by Tania Sausen of INPE.

Peter Willmore, School of Physics and Space Research, University of Birmingham, Birmingham, B15 2TT, UK
apw@star.sr.bham.ac.uk

INITIATIVES AT THE UNITED NATIONS (FEBRUARY-MARCH 2002)

At its meetings in Vienna 25 February-8 March, the Scientific & Technical Subcommittee of the UN Committee on the Peaceful Uses of Outer Space (UN-COPUOS for short) discussed a large set of initiatives to implement the recommendations of the UNISPACE III conference in Vienna in 1999 (during which, I recall, the IAU, COSPAR, and the UN Office of Outer Space Affairs organised a Special Educational Workshop, the recommendations of which became part of the Final Report of UNISPACE III).

Action Team 17 consists of several Member States led by Japan, as well as several NGOs, including the IAU (represented by C46 President Syuzo Isobe) and COSPAR (represented by Prof Peter Willmore). As I was the only IAU (and COSPAR) representative actually present in Vienna at the time, I attended the 1 March meeting of this Action Team. Its theme is the UNISPACE III

recommendation "To enhance capacity-building through the development of human and budgetary resources; the training and professional development of teachers; the exchange of teaching methods, materials, and experience; and the development of infrastructure and policy regulations". Only a handful of countries were represented, but the Japanese meeting organisers were clearly very motivated, constructive, and well organised.

Preliminary plans before the meeting included the set-up of a list of available fellowships in space science and engineering; the creation of a collection of available teaching methods and materials; and the organisation of a meeting in late 2002 to discuss experience and plans. These plans were discussed in some detail, both as regards the intended level (Students? School teachers? High school/college teachers? Universities? Postgraduate?) and line of specialisation (Astronomy? Basic or applied space science? Space engineering?).

On behalf of the IAU and COSPAR, I urged that,

1 To 'enhance', one needs to be proactive and ambitious and not limit the scope to making inventories of the present situation;

2 To do so, specific goals, milestones, and roadmaps must be set up so that progress towards the goals can be measured and monitored, and

3 In order to be most useful, inventories of teaching methods, materials, and experience should be structured based on the different levels of development of the country, region, or institution in question, and on the disciplines one wants to promote in each case. This is the old idea of an 'IAU Cookbook' where one would be able to find a description of the situation one is in (our TAD programme offers a wide selection of typical situations!), and be directed to a set of advice, resources, and recommendations based on experience from similar settings.

I really do believe that the IAU could do the cause a valuable service by preparing the first example of such a document (for astronomy, obviously). Once it has been set up and proved to work, adapting it to neighbouring disciplines will be much easier. And of course it should be a living thing, presumably residing on the web and updated every 1-3 years as experience accumulates and new initiatives or resources are developed. I actually think it would be a fun thing to do!

More input is to be directed to the Japanese organisers before the June meeting of COPUOS itself (through Syuzo Isobe, please); a meeting is then likely to be organised late in the year to discuss this input and develop strategies and plans for the future. IAU members should be able to provide much valuable input to this process.

Johannes Andersen
Niels Bohr Institute for Astronomy, Physics and Geophysics Astronomical Observatory, Juliane Maries Vej 30, DK - 2100 Copenhagen, Denmark
ja@astro.ku.dk

COMMUNICATING ASTRONOMY (FEBRUARY-MARCH 2002)

A meeting on 'Communicating Astronomy' at La Laguna in Tenerife, Canary Islands, Spain, during 25 February to 1 March 2002, dealt with many stages of astronomical education. It was sponsored by the Instituto de Astrofísica de Canarias, whose Terry Mahoney was the principal organizer. IAU Commission 46 Liaisons and past and present Officers who attended included Derek McNally, Barrie Jones, Margarita Metaxa, and Jay Pasachoff; Syuzo Isobe was on the organizing committee.

The first day was devoted to bibliometrics and publishing. Speakers included Helmut Abt (US), former long-time editor of the Astrophysical Journal; Derek McNally (UK); Guenther Eichhorn (US), head of the Astrophysical Data System (adswww.harvard.edu) for on-line past journal articles; Michelle Storey (Australia), editor of the electronic journal 'Publications of the Astronomical Society of Australia (PASA)'; and Josefina Ling (Spain), about the 'Information Circular' of IAU Commission 26; among others.

The second day saw discussion of posters, conference proceedings (Mahoney, Spain), journals (J J Blom, Netherlands), and textbooks (Pasachoff, US). In the afternoon, the group visited the solar and nighttime telescopes at the Teide Observatory (see contents page).

On the way to the Teide Observatory, from left to right, Derek and Shirley McNally, Barrie and Anne Jones, Naomi and Jay Pasachoff (photo Jay Pasachoff)

The third day included discussions by Paul Murdin (UK) about editing the 'Encyclopedia of Astronomy and Astrophysics'; Barrie Jones (UK) about distance-learning materials; and Margarita Metaxa (Greece) about teaching astronomy in the modern classroom. A video conference in the evening with Patrick Moore and his past and present BBC producers, about his long-running 'Sky at Night' TV show, ended the day.

Days three through five included several presentations on making videos for television about astronomy, and included presentations by Heather Couper and Nigel Henbest, Richard Burke-Ward, and Hugh Mason. Inés Rodríguez Hidalgo (Spain), Luis Díaz Vilela (Spain), and Ignacio García de la Rosa (Spain) discussed various aspects of outreach, including the Museo de la Ciencia y el Cosmos where we were meeting.

Naomi Pasachoff and Margarita Metaxa outside the Museo de la Ciencia y el Cosmos, La Laguna (photo Jay Pasachoff)

On the final day, Elizabeth Griffin (UK) spoke of the need to preserve astronomy plate archives and of current plans for digitizing at least some of them. Ian Morison (UK) spoke about radio pollution and about Jodrell Bank's outreach efforts. Javier Díaz Castro spoke about efforts to fight light pollution in the Canary Islands.

The meeting, though small, brought forward various interesting aspects of astronomy education, and the Proceedings should be widely read.

Jay M Pasachoff
(for contact details see 'Officers & Organising Committee of Commission 46')

PROPOSED EDUCATION SESSIONS AT THE IAU GENERAL ASSEMBLY 2003

It was reported in the last edition of this Newsletter that the Organising Committee of Commission 46 was developing a proposal for a 3 day Special Session on astronomy education at the 25th IAU General Assembly (GA) in Sydney, July 2003. John Percy has led the development of this proposal, and it will be considered shortly by the Executive Committee of the IAU.

The proposal is for a session provisionally called 'Effective Teaching and Learning of Astronomy', to take place 23-25 July 2003, and leading into Commission 46's 'Teacher's Day' on Saturday 26 July (perhaps extending to the Sunday). This wide-ranging session would cover school education from the youngest level to introductory courses for science and non-science students. In John Percy's words "Much is known about effective teaching and learning of astronomy. Very little is implemented in schools and universities". The training of astronomers at the undergraduate and graduate level, and public education, would be outside the scope of this session.

Though the Special Session would include astronomy in the developing world, a second proposal has been developed, largely by Alan Batten and Athem Alsabti, but under the auspices of Commission 46, for a half-day session on 'Advanced Astronomy for Developing Countries'. The emphasis of the session would be on research. The session would bring together astronomers from developed countries and from those developing countries with some modern instrumentation and sizeable astronomical communities where the astronomers nevertheless feel cut off from the mainstream of modern research.

If the Executive Committee of the IAU accepts either of these proposals then details of the session(s) will be included in the October 2002 edition of this Newsletter.

Barrie W Jones
(for contact details see 'Officers & Organising Committee of Commission 46')

EDUCATION SESSION AT THE UK NATIONAL ASTRONOMY MEETING 2004

As I announced in the last edition of the Newsletter, the UK National Astronomy Meeting in 2004 will be held at the Open University in Milton Keynes (central England), and I am chair of the Organising Committee. The provisional dates, which are very likely to be the actual dates, are 28 March-2 April.

My intention to have an education session, which I mentioned in the last Newsletter, has already drawn some positive interest. However, it will not be until about this time next year that detailed planning of the programme will begin. A website will be launched in late April http://physics.open.ac.uk/namadd.htm , but until mid-2003 (next year) it will be rather sparse.

Barrie W Jones
(for contact details see 'Officers & Organising Committee of Commission 46')

OFFICERS & ORGANISING COMMITTEE OF COMMISSION 46

President **Syuzo Isobe** isobesz@cc.nao.ac.jp
National Astronomy Observatory, 2-21-1, Osawa, Mitaka, Tokyo 181, Japan

Vice-president **Jay Pasachoff** jmp@williams.edu
Astronomy Department, Williams College, Williamstown, MA 01267, USA

Past-president **Julieta Fierro** fierroju@servidor.unam.mx
Instituto de Astronomia UNAM, AP 70-264, CP 04510 DF, Mexico

Newsletter PG Chair **Barrie W Jones** b.w.jones@open.ac.uk
Department of Physics, The Open University, Milton Keynes, MK7 6AA, United Kingdom fax +44 (0)1908 654192

Organising Committee

This presently consists of the President, Vice-president, Past-president, a representative from the IAU Executive Committee, the chairs of the program groups, and the vice-chair of the program group Exchange of Astronomers. For details of the OC, and for the other members of the program groups, see the website below, and also Newsletter 53, under Section B of the item, The Business Meeting of C46 2000.

National liaisons

These are listed on the website **http://physics.open.ac.uk/IAU46**