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

Newsletter 60 – March 2004

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 websites
http://astronomyeducation.org
http://physics.open.ac.uk/IAU46

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EDITORIAL

I want to thank everyone who has made a contribution to this edition of the Newsletter. The copy date for the October 2004 issue is 30 September. If you can include photos or illustrations with any article, report, or announcement, so much the better.

Recall that at the C46 Business Meetings in Sydney in July, four points were made regarding the Newsletter.

- Fewer hard copies should be mailed, to reduce costs.
- The Newsletter should be made known to other organizations, such as planetariums, media, science centres, and relevant educators.
- IAU members should be encouraged to read it!
- It should have wider circulation within the IAU.

We accomplished the first point with the October 2003 edition, following a survey of those receiving hard copies. As a result, fewer that 10 hard copies were produced, at an almost negligible total cost (less than £(UK)10, or less than about $(US)18).

A small amount of progress has been made with the remaining three points, though not as much as I had hoped – this is because of extensive hospital treatment I have undergone, which has consumed a lot of time over the last few months. Jay Pasachoff, in his President's message, has referred very kindly to my efforts to carry on working. I hope to be able to work more normally from mid-April. However, **regarding the second and third points, National Liaisons should in any case make all reasonable efforts to make the Newsletter more widely known**.

Our website could also do with some development – again I hope to be able to attend to this in the not-too-distant future.

I wish your clear skies for the forthcoming transit of Venus.

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

MESSAGE FROM THE PRESIDENT

It is rewarding for me, during my first year as President of the IAU Commission on Education and Development, to see the diversity of our efforts to spread astronomy around the world. We are working with schools, we are working with universities, and we are working with the general public.

As I write, John Hearnshaw (New Zealand), head of our Program Group on the World-Wide Development of Astronomy, is in Mongolia, working with university people there. He is paving the way for, if things work out, later visits sponsored by our Program Group on Teaching Astronomy for Development, about which we are both in touch with Jay White (USA), its head. I myself am in touch with people from South Africa, where I intend to represent our Program Group on Public Education at the Times of Solar Eclipses on the occasion of the partial solar eclipse that is to be visible only from southern Africa in mid-April, a near duplication of the region there of 2001's and 2002's total solar eclipses. I have also made recent contact with an astronomer from Ecuador, a jumping-off place for the 8 April 2005 hybrid annular/total eclipse, and am talking to our other Program Groups for possible support we can give to astronomy education there. We provide information about safe observing of eclipses and about logistics at our Website at http://www.eclipses.info

We are still working with our successes of last year at the International Astronomical Union's General Assembly in Sydney. John Percy (Canada) has been hard at work on manuscripts from many of our colleagues for the proceedings of our special session on Effective Astronomy Teaching and Learning and he has been shoveling drafts to me and requesting other materials from me. We are very pleased that Cambridge University Press has agreed to publish the book, which we are trying to make more general than mere proceedings.

It is wonderful that the whole IAU passed the resolution on the value of teaching astronomy that was first suggested and drafted by Magda Stavinschi (Romania) and worked on by Percy and others. You will find it on our Website and, of course, in the proceedings of our special session as well as in the Transactions of the International Astronomical Union, which will have an abbreviated version of the proceedings.

I am glad we were able to arrange a website with a name that is easy to remember: www.astronomyeducation.org I hope that the many National Liaisons from countries around the world check on this website regularly and that they report on new materials in it to their colleagues. Keeping track of the National Liaisons and keeping the list current is one of the tasks of our Vice-President, Barrie Jones (UK), who is assisted at his university, the Open University, by Tracey Moore. I look forward to attending a meeting there about solar eclipses in August, an amateur-professional meeting. We welcome a new National Liaison, based in Trinidad and Tobago, for a group of Caribbean nations.

NASA's Mars Rovers, Spirit and Opportunity, are engendering public interest in astronomy all around the world. I hope that in the long run the emphasis on Mars, which I think may be excessive, won't lead to astronomy fatigue among the public. I feel strongly that we must have a balanced program in astronomy, which is a major reason why I am so upset by the cancellation of the Hubble Space Telescope's upgrade missions (though a slim chance remains that the mission could be restored).

This year, 2004, is to see the first transit of Venus since the year 1882, so nobody alive has ever seen one. Major educational programs are being mounted by the European Southern Observatory and by NASA. These programs and others, historical information, links to book reviews, and a report on my own scientific team's work on revealing the explanation of the previously mysterious black-drop effect, are all found on a Website our commission runs at http://www.transitofvenus.info

About half the world can see the transit, and I hope everybody who can see it does see it, taking suitable precautions with filters or eyepiece projection, of course. I look forward to coordinating with Commission member Margarita Metaxa (Greece) when I go to her country to observe the transit from the ground in coordination with space observations. Our Commission has given its imprimatur to an IAU Colloquium on the transit to be held in England, near the site (and visiting the exact site) where the first transit of Venus was seen, in 1639, though I myself am opting for a better chance of clear skies. I will lecture about the transit in Pune, India, including how to watch it safely, in conjunction with a trip to the Giant Metre-wave Radio Telescope near there, as well as lecturing in the United States in Boston and Washington.

Last fall saw an interesting meeting on Communicating Astronomy, held in Washington, DC, and a report appears in this newsletter. The meeting led to the adoption of a 'Washington Charter' dealing with public education in astronomy and to an organized steering group. It was my preference to have this activity as a Program Group of our Commission, though finally it was organized as a Working Group within the IAU's Division XII on Union-Wide Activities, the division within which our Commission is also located. We are trying to work out suitable ex-officio liaisons with this worthwhile activity. (See first article below – ed.)

Those of us in contact with Barrie Jones, our Vice-President, know how bravely he is facing an illness, and we wish him the very best. We admire his working through adversity and are inspired by the importance he attaches to the activities of our Commission.

Our past President, Syuzo Isobe (Japan), is Chair of our Program Group on Collaborative Activities. He has recently returned from an international meeting that advanced our aims. He was in Vienna to attend the UN/COPUOS (United Nations Committee on the Peaceful Uses of Outer Space) meeting, where one of the topics was follow-up action to the UNISPACE III (Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space) work on 'Capacity Building', the UN jargon for increasing the education and training of individuals and institutions related to international development. (See, for example, www.capacity.org) They adopted a resolution on 'The Space Millennium: Vienna Declaration on Space and Human Development' (http://www.oosa.unvienna.org/unisp-3/res/html/viennadecl.html). Its final report has passed its Science and Technology sub-committee; we hope that it will be endorsed at the UN General Assembly.

Michele Gerbaldi (France) and Ed Guinan (USA) continue with the organization of International Schools for Young Astronomers (ISYA), in which our Commission's activities target young scientists in a way that can have a lasting effect. The next ones will be: the 27th, 2-23 July 2004, at Al Akhawayn University in Ifrane, Morocco, and the 28th, 25 July – 12 August 2005, at Instituto Nacional de Astrofisica, Optica y Electronica (INAO), in Puebla, Mexico. For a grant proposal I was preparing for the Commission recently for a program of the International Council of Scientific Unions, they worked out the following statement as a description of their activities: "We expect that long-term professional and educational connections and relationships will be established in that way with the help of the ICSU. This can be followed by the organization of an ISYA 'International School for Young Astronomers' in the country visited or in a nearby more astronomically developed country, that will reinforce the visibility, effectiveness and permanence of such actions. These ISYA programs have been very successful in bringing together potentially interested scientists and by exposing them to the fundamentals of astronomy but also to expose them to the many exciting developments that are taking place in astronomy and astrophysics today. These ISYA programs also reinforce not only the participants' knowledge of astronomy and astrophysics but also often lead to the creation of a regional educational and research networks."

Charles Tolbert (USA), as Chair of our Program Group on the Exchange of Astronomers, continues their useful activities with John Percy as Vice-Chair.

The one of our activities that is least active is the Program Group on the Exchanges of Books, Journals, etc. Volunteers to coordinate such exchanges – which are less necessary now in the days of the World Wide Web than they used to be – would be most welcome.

Over the next months, we should all be thinking of suitable topics for colloquia, special sessions, or symposia for the General Assembly to be held in Prague during the summer of 2006. We hope for a good representation of the various parts of our Commission's activities.

It is an honor for me to deal with so many talented and dedicated people as my colleagues in the Commission, and also an honor to have a chance to try to spread knowledge of our science around the world. I am always open to suggestions for new activities or how to improve our old ones.

With best wishes
Jay M Pasachoff
(for contact details see Officers & Organizing Committee of Commission 46)

THE NEW IAU DIVISION XII WORKING GROUP ON COMMUNICATING ASTRONOMY TO THE PUBLIC

This working group (WG) has its origins in a conference entitled 'Communicating Astronomy to the Public' held at the US National Academy of Sciences in early October, 2003, sponsored by the US National Research Council and the National Radio Astronomy Observatory, with support from NSF and NASA. The meeting brought together the 'producers' of astronomical information (research scientists), 'public information officers' (connected with large observatories and space missions), and 'mediators' (science reporters and writers, staff members from museums, planetariums, and national parks, operators of commercial web sites focussed on astronomy, and a writer and a director of science fiction, as well as some K-12 and 2-year college teachers). There were representatives of Canada and several European countries.

The WG is co-chaired by Dennis Crabtree (NRC-HIA) from Canada and Ian Robson (UKATC) of the UK, both of whom are IAU members. Lars Lindberg Christensen of ESO is the Executive Secretary and has contributed greatly to the initial organizational efforts. We started to recruit members for our orgainzing/executive committee who will guide the efforts of the working group. The committee will be comprised of IAU members with a broad geographical distribution and involved in various aspects of astronomy communication.

The WG has established a website (http://www.communicatingastronomy.org) for its activities. The website is currently a draft and we hope to have a final version available in a couple of months. We expect the WG to take a lead in having the Washington Charter endorsed by professional astronomy societies, research institutes and observatories. The Charter arose from the Washington meeting mentioned in the first paragraph. The Charter is on the agenda for endorsement by the Boards of the professional societies in Canada and the UK which meet in April and June of this year.

Dennis Crabtree
Ian Robson
Lars Lindberg Christensen

Dr Dennis Crabtree, National Research Council Canada, 5071 West Saanich Rd, Victoria, BC V9E 2E7, Canada (Conseil National de Recherches Canada, 5071 chemin West Saanich, Victoria, C-B V9E 2E7 Canada), Tel 250-363-0024, fax 250-363-0045, Dennis.Crabtree@nrc-cnrc.gc.ca

REPORT FROM THE PROGRAM GROUP ON TEACHING ASTRONOMY FOR DEVELOPMENT (TAD)

The efforts by the Program Group on Teaching Astronomy for Development (TAD) continue to grow and mature around the world. In the nine years since its formation, TAD has been active in efforts to enhance the astronomy education and scientific presence in countries such as Vietnam, Honduras, and Morocco. The enhancements come in the form of extended visits to the countries by foreign scientists, financial support for travel abroad by local students pursuing advanced degrees, and donation of books, equipment, and other supplies that will enhance a country's scientific and educational infrastructure.

In addition to its ongoing, planned, and potential activities in countries around the world, TAD continues to work with astronomers and educators in Vietnam, the Philippines, a few countries in Central America, and Morocco. While there is anticipated lessening of activities in some countries (e.g. the mature program in Vietnam) with expectation that programs begun with TAD assistance will continue by the efforts of local astronomers, there is also a plan to enhance the efforts in one country.

TAD has been successful in Morocco at Casablanca's University Hassan II - Ain Chock, by the great efforts of Khalil Chamcham, and on 2 July IAU General Secretary Oddbjorn Engvold and TAD Chair Jay White will meet with officials of Al Akhawayn University (AAU) in Ifrane to sign a contract for TAD assistance at AAU. Further, that AAU is the site of this year's ISYA, which begins on the same day as the signing of the new contract, provides momentum for what the TAD Committee hopes to be a successful, growing astronomy presence at AAU, which, in turn, will enhance astronomy throughout Morocco.

At the IAU General Assembly in July 2003, members of TAD and the Program Group for the World Wide Development of Astronomy (WWDA) sat down for an informal discussion of what the next years can and should hold for the Program Group's activities. PG members constructed a list of potential countries for TAD activities, and John Hearnshaw (New Zealand), Chair of WWDA, has just completed a visit to Mongolia's National University in Ulaan Batthar – a likely location for new TAD activities. To bring the activities of TAD and WWDA closer together, White and Hearnshaw are now serving as ex officio members of the other's Working Group.

Jay White, Chair, Program Group on TAD
Don Wentzel, Vice-Chair, Program Group on TAD

James C White II, Chair and Crain Professor of Physics, Department of Physics, Rhodes College, 2000 North Parkway, Memphis, Tennessee 38112, USA, tel 901 843 3915, fax 901 843 3117, http://www.rhodes.edu, jwhite@rhodes.edu

THE FORTHCOMING TRANSIT OF VENUS

June 8, 2004, will see a transit of Venus across the face of the Sun, the first transit of Venus since the year 1882. Accordingly, people across most of the world can potentially be excited by this exceedingly rare event.

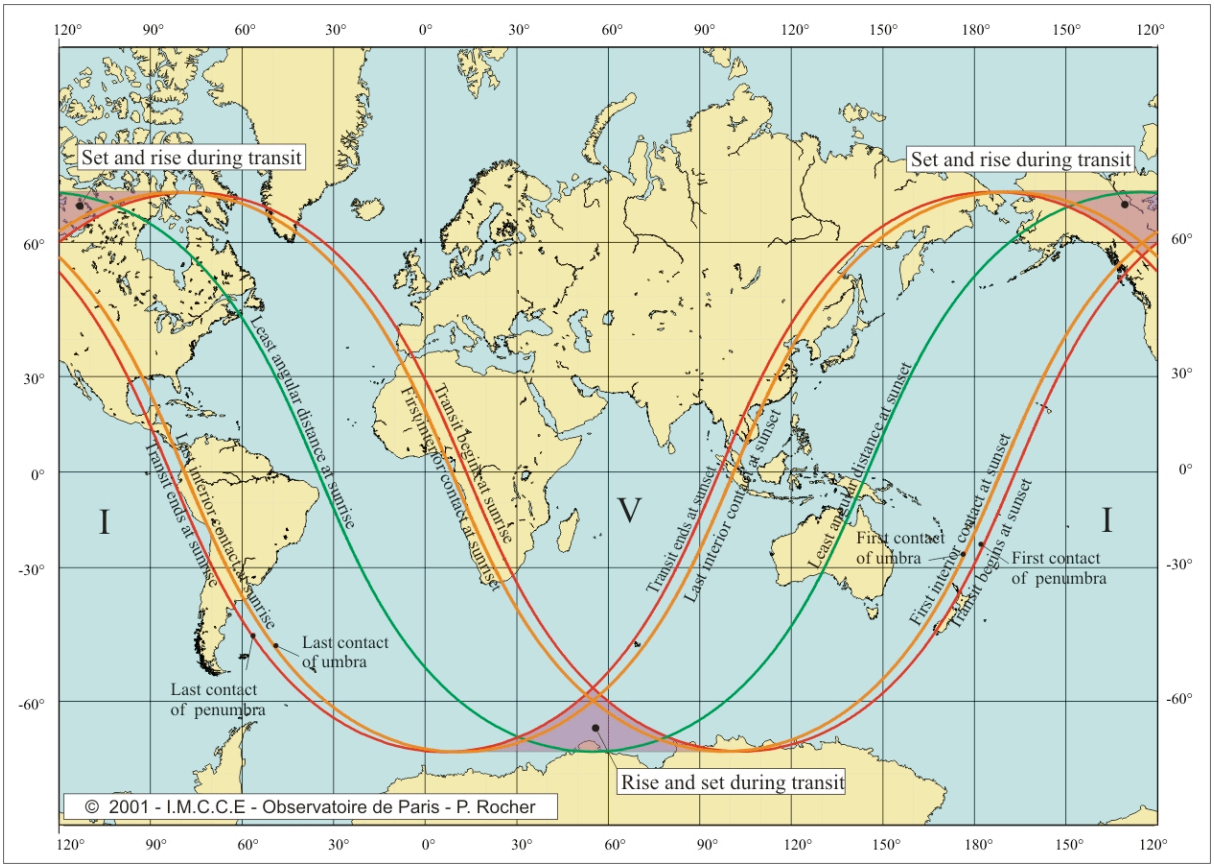
Since Kepler's laws of 1609 and 1619 give the scale of the Solar System as a proportionality, any one distance was necessary to fix the entire scale. Following ideas of Edmond Halley, transits of Venus were found to provide the best possibility. The first such transit was observed by only two people – Jeremiah Horrocks and his friend William Crabtree – in 1639. The transits of 1761 and 1769, as a result of the scientific interest, saw dozens of expeditions going all over the world so as to measure Venus's parallax by its projection against the face of the Sun. The transits of 1874 and 1882 similarly saw dozens of expeditions each. Those five are the only transits of Venus ever seen.

The transits appear as pairs separated by 8 years and then intervals of 105 or 120 years. The next transit will be in 2012, and then there won't be another pair of transits until 2117 and 2125.

The Commission on Education and Development's Program Group on Public Education at the Times of Eclipses has also taken on the project of public education at the transit of Venus. It has a website at http://www.transitofvenus.info The site provides reviews of books, shows some illustrations, links to photographs and movies of not only transits of Venus but also transits of Mercury, and describes how the problem of the 'black-drop effect', which impeded accurate measurements, was recently solved.

The site links to major educational projects of the European Southern Observatory, at http://www.vt-2004.org/, and of NASA, at http://sunearth.gsfc.nasa.gov/sunearthday

The site also links to maps showing where the transit is visible, which includes parts of every continent.



National Liaisons are invited to provide this information widely in their countries and to give information about safe observation. Since the transit is across the face of the Sun, solar filters of the same kinds used at partial phases of solar eclipses are necessary, or eyepiece projection methods should be used. Links on safe observing of eclipses appear on our website at http://www.eclipses.info

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

INITIATIVES IN SPAIN AND EUROPE RELATING TO THE TRANSIT OF VENUS

The Spanish Royal Society of Physics (RSEF) and the Spanish Royal Society of Mathematics (RSME) are organising a competition for school students about the transit of Venus as part of the annual project for teachers, 'Fisica en Accion'. The title of this competition is 'Pilla el Tránsito'. The main objective is to promote the observation of the transit of Venus in Spanish schools. It involves a group of students coordinated by a teacher. It is not necessary that the students have a special background in astronomy. They only need to be curious about this topic. Each team presents a report of how they prepared the observation (collecting information and structuring the timetable of the observation), how it was carried out (including drawings, photos and/or some minutes of video recording), and how the experience was discussed in the days that followed. The best reports will be selected in order to be included in the official web page of the project.

The requirements are very simple

1. To get images of the transit directly or from web sites etc.
2. To observe directly the transit and explain this experience including technical details and personal reactions
3. To explain the activities that the class developed in order to prepare the observation

4. To get information about how the transit of Venus was an important opportunity for European scientists to cooperate as a group in the 18th century, to calculate the distance from the Earth to the Sun
5. To explain their discussions and feelings in the days following the transit
6. To mention the references used (books, CD-ROMs, web sites, etc.)
7. To write a report of the work before 31 July 2004 (at 1200 UT)

The first prize is a trip to Instituto Astrofísico de Canarias (IAC) for the teacher and three students. More details at http://ific.uv.es/fisicaenaccion

In Europe, the European Southern Observatory (ESO), the European Association for Astronomy Education (EAAE), the Observatoire de Paris, Institut de Mécanique Céleste et de Calcul des Éphémérides, and the Astronomical Institute of Academy of Sciences of the Czech Republic, are organising the Transit of Venus 2004 Project with the support of the European Commission. This involves all European countries. The main goal for schools is to observe the event and to participate in the recalculation of the astronomical unit (AU). The schools that want to participate have to send the times of the four contacts to the web site of the project and they can see their AU results on the web page. Also the school will receive a diploma certifying their participation in this common calculation. The project is a memorial to the 1761 and 1769 transits that were a special opportunity to involve all the European astronomers in a common project. On the web site there is a set of short information sheets about: the significance of the transit, basic notions, observations, calculations, the planet Venus, the history of transit observations, and extrasolar planets. In particular there are some special sheets for teachers and students in order to explain

a) why every 120 years there are a couple of transits within eight years of each other, using cardboard models and human models with the students as planets
b) how it is possible to calculate distances, using angles, and introducing the parallax concept with the aid of several devices to measure angles in the school playground
c) how to calculate the distance Earth-Sun through observation of the transit of Venus applying simplified assumptions which can be studied by means of elementary mathematics well know by students at school.

Primary school students forming a human model
in order to understand the movement of Venus

High school students making a model in the lab in order to understand the relative position of the Sun, Venus and the Earth

There are activities from primary to high school levels, because the main purpose of the project is to promote the observation of the transit to all pupils and ultimately to promote astronomy in school. In this spirit, a cookbook for teachers will be online in a few weeks to provide, in a clear, understandable form, the fundamental ideas so that teachers without any background in astronomy can teach a lesson on the subject.

This is a very exciting project and there are some participants from non-European countries (for instance Australia, United States, Martinique, Iran, Bangladesh, Colombia, Congo, and Kenya). Of course, other countries can also participate in this international adventure. All interested schools are welcome. Please contact the web site http://www.vt-2004.org/

(See also http://www.transitofvenus.info – ed.)

Rosa M Ros
ros@mat.upc.es

EDUCATION AND PUBLIC OUTREACH AT THE US NATIONAL SCIENCE FOUNDATION

Beginning in 2002, NSF required all proposals to address specifically the two NSF merit-review criteria – intellectual merit and broader impact – in the proposal summary. While most proposers to the Astronomy Division are aware of this requirement and meet it in their proposal submission, a minority of proposers appears not to realize the importance of this submission requirement. In fiscal year 2004, 13 of the 375 proposals submitted to the Astronomy and Astrophysics Research Grants

program were returned without review because they failed to address both criteria in the proposal project summary.

For NSF, the notion of 'broader impact' goes far beyond the commonly used phrase 'education and public outreach' or EPO, and, in fact, includes many of the activities that an active researcher and teacher would already be doing. To help proposers understand what NSF means by 'broader impact,' we have collected some examples below. The list is not meant to be exclusive or exhaustive, nor is any proposal meant to include all of them. But it is important to call them out explicitly in the proposal.

How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- including students (undergraduate, graduate, or K-12) in research
- bringing the research into teaching; do you incorporate your research into your lectures?
- involving graduates and post-docs in undergraduate teaching activities
- encouraging student participation at scientific and professional meetings
- developing or partnering with educators to develop research-based educational materials.

How well does the proposed activity broaden the participation of underrepresented groups (e.g. gender, ethnicity, disability, etc)?
- establishing research collaborations with students and/or faculty who are members of underrepresented groups or who are from institutions that serve underrepresented groups ('underrepresented groups' include women and minorities – ed.)
- including students from underrepresented groups in research or educational activities.

To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- supporting the development and dissemination of instrumentation, multi-user facilities, or tools
- upgrading computational tools and/or infrastructure.

Will the results be disseminated broadly to enhance scientific and technological understanding?
- making data available to the scientific community and/or the public
- giving scientific presentations to the public (e.g. schools, local groups)
- participating in multi- and interdisciplinary conferences or workshops.

What may be the benefits of the proposed activity to society?
- giving examples and explanations of how the research aids society
- analyzing and interpreting research and education results in formats understandable and useful for non-scientists.

Eileen D Friel, Executive Officer, Division of Astronomical Sciences, National Science Foundation, Arlington, VA 22230, tel 703 292 4895l, efriel@nsf.gov
(Modified from a piece in the March 2004 Newsletter of the American Astronomical Society.)

DECADAL REPORT ON THE UN/ESA WORKSHOPS ON BASIC SPACE SCIENCE

The United Nations and the European Space Agency have finalized a decadal report on the UN/ESA Workshops on Basic Space Science, held in the period 1991 to 2002. The report is published as

Developing Basic Space Science World Wide: A Decade of UN/ESA Workshops, Eds. W.Wamsteker (ESA), R Albrecht (ESO), and H J Haubold (UN), Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003, 500pp.

When the first UN/ESA Workshop for Basic Space Science was held in Bangalore, India in 1991, on the invitation of ISRO, few of those involved could expect that a unique forum was going to be created for scientific dialogue between scientists from developing and industrialized nations. As the format of the first workshop deliberately included time for presentations, working sessions, and plenary discussions, the workshop was left to find its own dynamics After a decade of UN/ESA Workshops, this book brings together the historical activities, the plans which have been developed over the past decade in the different nations, and the results which have materialized during this time in different developing nations. It aims to achieve for development agencies ways to be assisted in finding more effective tools for the application of development aid. The last section of the book contains a guide for teachers to introduce astrophysics into university physics courses. This will be of use to teachers in many nations. Everything described in this book is the result of a truly collective effort from all involved in all UN/ESA workshops. The mutual support from the participants has helped significantly to implement some of the accomplishments described in the book. Rather than organizing this book in a subject driven way, it is essentially organized according to the common economic regions of the world, as defined by the United Nations (Africa, Asia and the Pacific, Europe, Latin America and the Caribbean, Western Asia). This allows better recognition of the importance of a regional, and at times global approach to basic space science for the developing nations worldwide. It highlights very specific scientific investigations that have been completed successfully in the various developing nations. The book supplements the published ten volumes of workshop proceedings containing scientific papers presented in workshops from 1991 to 2002.

Information on the workshops is also available at
http://www.seas.columbia.edu/~ah297/un-esa/index.html
http://www.oosa.unvienna.org/SAP/bss/index.html
http://www.oosa.unvienna.org/SAP/centres/centres.html

Hans,Haubold@unvienna.org

FOUR-IN-ONE ASTRONOMY CARD GAME

Cosmic Decoders, a set of cosmic card games featuring images taken by and of the world's largest telescopes, has just been released by the non-profit Astronomical Society of the Pacific. The games, which combine learning and fun, are part of 'Family ASTRO', a national project to develop astronomy events and activities for families (with support from the National Science Foundation). They are appropriate for family members aged 8 and up.

The set of 72 cards features some of the best color images taken by the Hubble Space Telescope and other instruments on the ground and in orbit. Players learn about star clusters, nebulae, and galaxies, as well as the telescopes themselves, while enjoying such games as Build a Galaxy, Telescope Trouble, and Galactic Gobble. A special game web site gives players further opportunities to explore the objects and ideas raised in the games.

Cosmic Decoders is available for $(US)15.95, plus shipping and handling, through the web site of the Society, at: http://www.astrosociety.org/astroshop.html (Search the AstroShop for either Cosmic Decoders or Family ASTRO.)

Through Family ASTRO (now offered in seven regional sites around the USA), hundreds of astronomy event leaders have been trained and thousands of families have participated in the program. Other take-home kits that have been made available through the project include Moon Mission and Night Sky Adventure. For more information, see the project web site at http://www.astrosociety.org/education/family.html

Andrew Fraknoi
Foothill College, 12345 El Monte Road, Los Altos Hills, CA 94022, USA

Tel (Mon-Thur) 650 949 7288, tel (Fri) 415 337 1100 ext 120, fax 415 337 5205,
fraknoiandrew@fhda.edu

A LEARNING RESOURCES WEBSITE - ComPADRE

A Web site has been set up at http://www.compadre.org for 'a network of collections that provides learning resources and interactive learning environments...for physics and astronomy students and teachers in individual and collaborative settings'. Contributing organisations are the American Astronomical Society, the Society of Physics Students, the American Institute of Physics, the American Physical Society, Physics Central, and the American Association of Physics Teachers. Their Web sites, such as http://www.aas.org/education, are linked.

ComPADRE stands for Communities for Physics and Astronomy Digital Resources in Education.

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

NEWS OF MEETINGS

COMMUNICATING ASTRONOMY TO THE PUBLIC, OCTOBER 2003

(This report is further to that in the October 2003 edition of this Newsletter – ed.)

Nearly 250 outreach professionals in the astronomical community gathered in Washington DC, on 1-3 October 2003, to attend the conference on Communicating Astronomy to the Public. This three-day conference attracted public information officers, astronomers, educators, and members of the entertainment and news media, to explore the gaps in outreach, the current and emerging demands of the public, the needs of the astronomical community, and to work on methods to answer these needs.

The conference was organized by the National Radio Astronomy Observatory, and hosted by the US National Research Council. The morning sessions of this conference were based on a series of panel discussions, addressing such topics as astronomy in entertainment, image repositories, best practices, and underdeveloped audiences. Each afternoon featured various breakout sessions, organized around a series of questions generated during the morning panels.

The results of this conference are still bearing fruit through a number of on-going activities. The first outcome was the Washington Charter, which stresses the need for astronomy organizations to place sufficient emphasis on outreach, and provide the means to make a real contribution to this activity. The Charter is being disseminated among many organizations with the recommendation that it be adopted officially. Additionally, five full members of the American Astronomical Society (AAS) sent a formal request to the AAS Executive Committee that they adopt this document as an official position of the society.

Other outcomes include advancing public outreach as an official Working Group of the International Astronomical Union (see above). Also, a working group from the conference is now engaged in developing a shared-resource website with images, outreach materials, and information for the astronomical community. This is to serve as a resource for astronomers and those engaged in outreach.

The final outcome, which is perhaps the most important, is that efforts are underway to hold another such conference in the coming year. The sponsoring organization is still being identified, and details will be publicized once they are available.

Details and updates from this conference are located on http://www.nrao.edu/ccap

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

A NATIONAL (US) MEETING ON TEACHING ASTRONOMY FOR NON-SCIENCE MAJORS, JULY 2004

I am inviting you to participate in "Cosmos in the Classroom 2004', a 3-day symposium on teaching astronomy for non-science majors near Boston 16-18 July. (The information release about the meeting is below.)

Much of the meeting will be in the form of 50-minute hands-on sessions demonstrating useful teaching techniques, curriculum approaches, or resource materials. We expect 200 or more participants and to have 6 or 7 parallel hands-on sessions − to allow smaller groups to work together most effectively. Also, there will be poster papers (with time specifically set aside to view them).

The Program Organizing Committee is now interested in hearing from people who would like to offer a hands-on session on topics that would be helpful to colleagues who teach introductory courses. If you have something in mind, could I ask you to e-mail me a one to two paragraph summary explaining what you might do and how you might do it. Preference will be given to sessions where the participants get involved or practice something, rather than just listen to a talk.

The meeting web site has instructions for submitting a poster paper, which one can do in addition to or instead of offering a hands-on session.

We have arranged reasonably priced dormitory and hotel space, but expect the reserved space to sell out. Once you know you are coming to the meeting, we urge you to make reservations early to get the accommodation of your choice.

We look forward to seeing you at the meeting. Please feel free to forward this message to other instructors who may be interested.

A National Symposium on Teaching Astronomy for Non-science Majors
15-18 July 2004
on the campus of Tufts University

A 3-day hands-on symposium on teaching introductory astronomy at the college level will be held starting the evening of Thursday 15 July and ending the afternoon of Sunday 18 July, near Boston, Massachusetts. The meeting is sponsored by the Astronomical Society of the Pacific and NASA's New England Space Science Initiative in Education, with co-sponsorship from the American Astronomical Society.

The program includes components for veteran instructors seeking to re-invigorate their teaching, as well as for new instructors nervously approaching their first classes. Much of the conference will involve panels and small-group workshops with mentor instructors from around the country. Participants will also share information and resources via poster papers and a share-a-thon.

The conference will focus on how new results from research into student learning can be applied in the real world of our classrooms, on alternatives to lecturing and multiple-choice tests, on new resources for teachers and students, on how to facilitate learning while managing classroom behavior, and on how to address the needs of under-served groups.

There will be lots of opportunities for networking with other instructors from your area or who teach in the same kind of setting you do.

Scholarships to attend the meeting are available for community college instructors, thanks to the generous support of NASA/JPL's Navigator Program.

For more information and registration instructions, please see the meeting web site at: http://www.astrosociety.org/events/cosmos.html

The meeting is also open to teachers of upper-level high school astronomy courses.

Andrew Fraknoi, Chair, Astronomy Program, Foothill College, 12345 El Monte Road, Los Altos Hills, CA 94022, USA,
Tel (Mon-Thur) 650 949 7288, Tel (Fri) 415 337 1100 ext 120, fax 415 337 5205,
fraknoiandrew@fhda.edu

USEFUL WEBSITES FOR INFORMATION ON ASTRONOMY EDUCATION MEETINGS

The following websites contain information on future (and recent) meetings and conferences on, or very relevant to, astronomy education and development. In compiling this short list I am well aware of a strong European bias. **Please email me URLs for relevant websites in other areas of the world.**

UK
The Association for Astronomy Education http://www.aae.org.uk
The British Association of Planetaria http://www.bap.redthreat.co.uk
The National Schools Observatory http://www.schoolsobservatory.org.uk

Europe
The European Association for Astronomy Education http://www.eaae-astro.org
The European Southern Observatory http://www.eso.org/outreach/eduoff

USA
(among several other good sites)
The Astronomical Society of the Pacific http://www.astrosociety.org

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

INFORMATION TO BE FOUND ON THE IAU C46 WEBSITE

The IAU C46 website http://astronomyeducation.org (or http://physics.open.ac.uk/IAU46) contains the following information.

- Commission 46 Terms of Reference, Rules & Guidelines
- Minutes of the most recent Business Meetings
- List of National Liaisons
- Offices, Organizing Committee & Program Groups
- Online Newsletters
- Presidents and Vice-presidents
- Resolution on the value of astronomy education (passed by the IAU General Assembly 2003)
- External links
- Announcements/news

OFFICERS & ORGANIZING COMMITTEE OF COMMISSION 46

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

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

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

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

Organizing Committee (OC)

The officers 2003-2006 are: the President, the Vice-President, the Retiring President, and three former Presidents in active liaison – Julieta Fierro, Derek McNally, and John Percy. For details of the OC, and for the other members of the Program Groups, see the website below, at the minutes of the Business Meetings held in Sydney, Australia, in July 2003.

National Liaisons

These are listed on the website http://astronomyeducation.org
(and http://physics.open.ac.uk/IAU46)