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COMMISSION 46
THE TEACHING OF ASTRONOMY
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[OFFICERS & ORGANISING COMMITTEE OF C46](#)

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Contents:

[Message from the President](#)

[The 1997 general assembly of the IAU, Kyoto, Japan](#)

[The 23rd International school for young astronomers \(ISYA\)](#)

[Report on IAU/TAD-sponsored "Summer school on astrophysics"](#)

[The TAD program in Central America](#)

[A trip to Paraguay](#)

[Exchange of surplus items](#)

[Vatican summer school](#)

[The importance of environmentally friendly lighting for developing countries](#)

[News from the UN office on basic space science](#)

[UN/ESA Workshop on data analysis techniques](#)

[Education page on the Hipparcos web site](#)

[Astronomy education around the world](#)

MESSAGE FROM THE PRESIDENT

I would like to acknowledge the fine work that the members who have served IAU Commission 46 have done. In particular, John Percy did an excellent job as past President. He not only fulfilled his duty, promoting understanding of Astronomy worldwide, but he also did many other chores, including the editing of our Newsletter. He also increased the links between members of our Commission and those of other groups such as teachers, amateurs, and staff of planetariums and museums. Each member of the Organizing Committee dedicated time and energy to their different tasks, so that now Commission 46 has served many nations by encouraging the formation of research groups, as well as by increasing love for knowledge through Astronomy. Fortunately, these people will continue to work for our Commission.

My impression is that good teachers are generous, and want to make other people enjoy what they feel is important. I would like to invite all members of Commission 46 to continue to exchange experiences through this Newsletter, and other media. I am convinced that individuals interested in promoting Astronomy education can benefit greatly from experiences which others have developed, by adapting them to their particular needs.

I would also like to encourage National Representatives to stay in touch with the members who serve on the Organizing Committee, since they have developed new ideas on Astronomy education, and can provide references on a wide variety of topics concerning public understanding of Science.

Julieta Fierro

THE 1997 GENERAL ASSEMBLY OF THE IAU, KYOTO, JAPAN

This year's General Assembly of the IAU was a large, successful, and enjoyable meeting for all concerned, and our Japanese hosts deserve our hearty thanks and congratulations. You will be able to read the reports and proceedings of the various sessions in the publications of the IAU. The minutes of the business meetings of IAU Commission 46 have been sent to the National Representatives, and will also be published by the IAU.

After the General Assembly, I attended the "traditional" one-day workshop for teachers and astronomers, ably organized by Syuzo Isobe (now the Vice-President of Commission 46), and Takao Mizuno, President of the Society for Teaching and Popularization of Astronomy. The workshop was attended by about 150 teachers. I was disappointed that there were only a handful of astronomers. Perhaps this was partly because the IAU and/or the organizers of the General Assembly did not include this workshop in the program of the General Assembly, even though I had asked them. The workshop began with welcomes from Drs. Mizuno and Isobe. There were seven invited oral presentations, about 20 posters and exhibitions, and a discussion period. The workshop was followed by a very enjoyable reception, at which astronomers and teachers could interact informally. Thanks again, on behalf of Commission 46, to all those who organized and participated in this event.

I also attended the annual meeting of the Variable Star Observers League of Japan, which was held at one of Japan's many public observatories. I was impressed by the way in which this facility supported both research, and public and school education in astronomy.

THE 23RD INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS (ISYA)

Donat G. Wentzel (Secretary for ISYA), University of Maryland August 20, 1997

The 23rd ISYA met July 4 - 23, 1997 in the mile- high city of Zanjan, Iran, on the attractive campus of the Institute for Advanced Studies in Basic Sciences (IASBS), at the invitation of its Director, Dr. Y. Sobouti. The IAU provided travel grants to 14 foreign participants from Nigeria, Indonesia, Turkey, Lebanon, Poland, Ukraine, and Russia, including the only two foreign women who applied. Among 24 Iranian participants from 11 universities and IASBS, almost half were women (selected on criteria independent of gender). Iran processed all foreign visa applications routinely. Two accepted Egyptian applicants could not attend because Egypt denied their visa to leave Egypt. Applications were expected from more countries, but the only advertisements occurred via the IAU Bulletin (which arrived too late in several relevant isolated institutions), the newsletter of Commission 46, and an e-mail network of former ISYA participants created when the lack of publicity became obvious.

A major goal of ISYA is to demonstrate, to scientifically isolated students, the frontier nature of astronomy, and the importance of questions, discussions, judgment on evidence, etc. This goal was so evidently achieved that we ended the ISYA one day earlier than planned. Particularly important for a quick start of discussions was the opportunity, already on the first day, for small-group daytime and nighttime sky observations and, soon thereafter, for practical work on computer-based data analysis. After some days, discussion groups formed quite independently of nationality or gender.

Nearly half the participants presented a short outline of their research. Several participants eagerly sought out foreign faculty for detailed presentation of their work.

For the first time at an ISYA, nearly all participants spoke English adequately for conversation even at the start of the ISYA. IASBS employs a professional translator to assure English proficiency among its students.

The lecture courses started at a basic level, since most Iranian students were physics students with only introductory astronomy. But nearly all courses led to some current research topic and demonstrated the flavor of frontier science. Several topics treated in two courses with different points of view demonstrated the breadth of astronomy. The foreign faculty members were: Ed Guinan (USA, binary stars and their many astrophysical applications, use of small telescopes), Rajaram Nityananda (India, gravitational lenses), Michele Gerbaldi (France, stellar atmospheres, data analysis with MIDAS), Jihad Touma (USA/Lebanon, chaos in the solar system), and Don Wentzel (USA, MHD and related solar physics). Mr. Arvind Paranjpye (from IUCAA, India) put the local telescope into working condition, provided his low-cost photometer for measurement of solar limb darkening and, with Michele Gerbaldi, supervised night-time observing, including several nights using a CCD. Michele Gerbaldi became a role model for the Iranian women and put them at ease talking with foreigners. The Iranian lecturers (giving relatively short courses) were: Y. Sobouti (IASBS, stellar structure), G. S. Nasiri (Zanjan University, radio astronomy), D. Jasour (Tabriz University, photometry), N. Riazi (Shiraz University, cosmology), and J. Samimi (Sharif University of Technology, gamma ray astronomy). Michele Gerbaldi brought two hard disks and software from Haute Provence Observatory, and ESO gave CD ROMS with MIDAS software, so that MIDAS could be installed on the local computer system and participants could analyze spectroscopic data. After much efficient advice by telephone and fax to France, the installation was finally successful on one PC. Locally, there was no one sufficiently familiar with the computer system to accommodate the new programs to it. The Iranian international Internet line was far too slow and erratic to either exchange information or to query any data base. This experience demonstrates the difficulties that will be faced in the future when participants from any workshops on computer data analysis, or workshops on the use of the data from astronomical archives accessible by web or ftp, will try to carry these programs home to their own institutions.

IASBS provided housing and meals. Its efficient staff ran the copy machine and attended to the many individual needs of participants. Much help was provided by the governor of the Province of Zanjan. We enjoyed cultural events, sports, and excursions to historical, archeological and volcanic sites. Ten years from now, this ISYA will have generated not only a few astronomers but also many scientists imbued with the spirit, the way of thinking, and the excitement of astronomy.

REPORT ON IAU/TAD-SPONSORED "SUMMER SCHOOL ON ASTROPHYSICS"

Vinh University, Vietnam, August 31 to September 12, 1997

Donat G. Wentzel (Secretary for TAD), University of Maryland October 11, 1997

Organization. This conference is central to the TAD (Teaching for Astronomy Development) program to re-introduce astronomy to Vietnam. It was organized by Prof. Nguyen Dinh Huan, vice-rector of Vinh University.

The IAU supported all travel costs, rooms, and meals for 32 Vietnamese participants (and for some senior Vietnamese astronomers who attended for a few days) and for the two foreign faculty, plus the costs of the conference in a government (air-conditioned) hotel. The total cost was about \$15,200. All the internationally donated equipment, books, and journals were displayed attractively during the opening ceremony and inspected by local and national officials. The 45 textbooks donated by Saunders College Publishing were actively used during my lectures since they contained color pictures,

problems, indices and factual appendices that are almost totally absent in local texts. Along with much other donated material, they were distributed to the represented ten universities and institutes in accord with their astronomy activities. The IAU-bought PC was set up (with some prompt faxed help from France) to analyze data from the Input Catalogue for Hipparcos (on CD Rom), with a view for Vinh astronomers to do some research using Hipparcos data. The IAU-bought slide projector, which apparently cannot be serviced even in Hanoi, suffers from attempted in-house repairs.

For various practical reasons, the conference was shortened from 14 to 13 days by eliminating one of the "free" days in the original schedule.

Academic plan. Prof. Nguyen Quang Rieu (Observatoire de Paris, coordinator for TAD Vietnam) and I divided among us lectures and discussions. I added some practical exercises and sessions on physics problems (see below). Outlines of our lectures, in Vietnamese, were provided to all participants well before the conference, but they were of little benefit because the material was too new and overwhelming for the participants. My lectures and discussions were translated "live" by Mr. Dinh Phan Khoi, one of the participants from Vinh University who also efficiently carried out the many details needed to make the conference run well.

Rieu's lectures centered on radio astronomy, its techniques and limitations, the physical origin of radio waves, and astrophysical applications, primarily to the interstellar medium but also in a broad sweep from the solar system to SETI and cosmology. I outlined the exploration of the solar system, then continued with solar science and stellar evolution. Our topics overlapped sufficiently that we carried on some discussions in front of the participants, showing them how one may have different viewpoints in a frontier science like astronomy.

(Related lectures on astrophysics and related problems in physics will be given in Hanoi November 17-22, 1997, sponsored by the National University of Hanoi, the University of Pierre and Marie Curie, Paris, and the Observatory of Paris.)

Response of the astronomy teachers. About half the participants teach the introductory course in astronomy that is required of physics students in Vietnamese universities and pedagogical institutes. This course emphasizes fundamental astronomy and currently includes astronomical development only until about 1968. The teachers, typically physics-trained and in their mid-30's, reacted eagerly to the modern astronomy and took home enough materials so as to incorporate some (at first probably small) part of modern astronomy into their courses. During the second week, we tried to have the teachers discuss among themselves how to do this, given their physical limitations (e.g. almost none have any projector in their home institution). However, the process of such a discussion was so new to them and my guidance in English too uncertain for any results during the conference. (The eliminated "free day" would not have helped.)

The teachers were particularly fascinated with our informal style of teaching, i.e. encouraging questions from and discussions among the participants. They insisted on receiving copies of a manual on co-operative learning by Grace Deming (University of Maryland). Follow-up astronomy teaching conferences, probably regional, are expected within a year. Small funds were left with the teachers to pay for international airmail (or possibly a fax) to seek help as they try to introduce some modern astronomy into their courses.

Response of the physics students. About half the participants were selected from the most able physics students nationwide. Disappointingly, most lacked even elementary astronomy, though they had taken the astronomy course. Most could not read the available books or journals in English (although a few were courageous enough to speak a few words of English with me at the end of the conference). More importantly, these students are used to passive transcription of notes from lecturer via board to their notebooks. Lacking any instructive experimental apparatus at their universities, they are

not used to thinking about what might be measured, or about the accuracy of a set of measurements, and certainly not about interpretations of measurements. Therefore, our discussions of astronomical observations were doubly abstract to them, in terms of both process and science. They needed an explicit introduction to the inquiry nature of basic science. Thus Rieu spent much time on observational aspects of radio astronomy. My interpretation of pictures taken by space probes at first left the students somewhat bewildered. However, by the time of the third practical exercise using astronomical photographs, the students began to learn how one might discuss such pictures with fellow students and reach some conclusion without the professor's dictation.

During the second week, I replaced a few lecture topics by the solution of a few actual physics problems, such as Kepler's third law used to obtain masses of newly detected planets or of black holes, temperatures and gravity on asteroids, contraction times of the early Sun, sunspots regarded as a solenoid, gravity on neutron stars. I emphasized the role of order-of-magnitude estimates, how one can set up simple problems that preserve the essential physics and how one can keep the mathematics in a form that can be readily interpreted in terms of physics. Students and teachers responded immediately to this format of presenting astrophysics.

THE TAD PROGRAM IN CENTRAL AMERICA

The exciting development of astronomy in six countries of Central America is being carried out, in part, through the IAU Teaching for Astronomical Development program. As mentioned elsewhere in this Newsletter, a UN/ESA Workshop on Basic Space Science was held in Honduras, and marked the inauguration of the astronomical observatory there. In 1998, the total solar eclipse on February 26 will bring together two important events in Panama: the IV Central American Assembly of Astronomers (IV-AAAC), and the IV Central American Course in Astronomy and Astrophysics (IV-CURCAA) from February 25 to March 1. Anyone interested in these events should contact Hector Castillo Silva (aaf2@ancon.up.ac.pa) or Maria Cristina Pineda de Carias (mpineda@ns.hondunet.net).

There will also be the II Astronomical Observational Campaign, to be held in Honduras, at the Central American Astronomical Observatory of Suyapa, January 15 to February 15. The purpose is to provide young astronomers and students with practical experience in observation and research.

A TRIP TO PARAGUAY

John Percy (from the University of Toronto astronomy newsletter)

Paraguay, you say? Where's that? It's that landlocked country (bordered by rivers, though) in the middle of South America. But why Paraguay? Because it is one of the countries in which the International Astronomical Union has been promoting the development of astronomy. For several years, the IAU Visiting Lecturers Program sent a series of astronomers to that country to give courses over several weeks, and to instill astronomy in the university and the community. One was U. of T. graduate Armando Arellano Ferro, from Mexico. The "lone astronomer" in Paraguay - Alexis Troche Boggino - has worked hard to develop astronomy courses, clubs, newsletters and other infrastructure. Now there are students and former students, teachers and amateur astronomers, and even a few other university faculty who have begun to develop interests in astronomy. The time was ripe for me (as president of IAU Commission 46: The Teaching of Astronomy) to spend an intensive week there, giving lectures, meeting with high-level administrators, faculty members, and especially students, to support the momentum of astronomical development which the locals have started so well.

An exciting new project looms on the horizon. The Ministry of Culture of Japan has a program to donate small telescopes and/or planetariums to developing countries, and Alexis Troche Boggino and his colleagues have prepared a convincing proposal.

Knowing the capability and versatility of small telescopes, I was able to talk up the project though formal and informal discussions with almost every segment of the local scientific and educational communities. This facility could have a significant impact on faculty and student research and training at the university, and education of teachers, students, and the general public. It could be a resource for the very active amateur astronomy community in the country. With some simple "hands-on" exhibits and displays, it could be a model for both schools and museums.

Even though I was only in Paraguay for a week, I got a taste of the history and culture: the friendly informality of the people, the art and music, the cuisine, and the diverse geography. It was definitely a place to which to return.

EXCHANGE OF SURPLUS ITEMS

Arvind Paranjpye sends the following message from the ISYA in Iran:

"During the ISYA in July 1997, I felt that there are some fellow astronomers who have survived under very difficult conditions, just because of their interest and love for astronomy. And they could do with whatever little help they can get.

The help could be in the form of replica gratings, to sheets of polaroids, to re/preprints, to small telescopes and accessories.

Those who have such surplus items may need not necessarily require to use the institutional channel, as one can pass these items as personal gifts. These items, however, may not reach their destination if sent by post. On the other hand, the items may be passed on during international meetings.

I am suggesting some kind of bulletin board (electronic or otherwise) or net where one can advertise what one has surplus, and what one wants, and those who are willing to carry the items. I may remind you here that some doctors collect unused medicines and (after checking expiry dates) give these to the needy who cannot afford them.

VATICAN SUMMER SCHOOL

Sara Poirier (University of Toronto student; from the University of Toronto astronomy newsletter)

This summer I was selected to attend the bi-annual summer school held by the Vatican Observatory in Italy. The sixth Vatican Observatory School in Observational Astronomy and Astrophysics took place at Castel Gandolfo (40 km from Rome) from the 8th of June to the 6th July 1997. In total there were twenty-four students attending from 21 countries around the world.

This year's topics of study were formation of the solar system, comets, asteroids, and meteorites. The faculty were some of the leading experts in these fields, and provided us with an in-depth look at this very exciting area of astronomy. Over the course of the month, the students and the faculty had the opportunity to interact on both professional and social levels. This allowed me to learn about the ways astronomy is being done in other countries around the world. More importantly, my new friends from these 21 countries taught me about their different cultures and ways of life. For a girl from a small town in Nova Scotia, this was a very important lesson indeed!

In addition to our regular classes and research we did a lot of sight seeing, Rome, being only a 30 minute train ride away, was a favorite excursion on Sundays. Additionally we were taken on field trips throughout the Tuscan region, highlighted by a 3 day visit to Florence.

Finally to top it all off we finished the school by having an attendance with the host of the school, Pope John Paul II, in private audience. Both of my grandmothers now have framed photos of me shaking the Pope's hand - so, saying I am in their good books is putting it rather mildly!

All in all it was an incredible learning experience, leaving me more excited than ever to be studying astronomy.

THE IMPORTANCE OF ENVIRONMENTALLY FRIENDLY LIGHTING FOR DEVELOPING COUNTRIES

David L. Crawford, International Dark-Sky Association, 3545 N. Stewart, Tucson AZ 85716 USA; e-mail: crawford@darksky.org

The following is the abstract of a paper presented at the CIE Conference in Durban, South Africa, September 1997:

"Environmentally friendly lighting is important for any locale, but especially so for developing countries, where energy costs are often higher than in many other countries. There is no location where one should waste light or energy. Good lighting has great value. This paper discusses details of the problems inherent in poor quality lighting, such as glare, light trespass or obtrusive lighting, clutter and confusion at night, urban sky glow, and energy waste. Solutions exist to all of these problems, and all lighting designs and installations should apply such techniques. Applications discussed and illustrated in the paper include: street and parking lot lighting, security lighting, and sports lighting. Valuable resources of information can be obtained from upcoming reports of several technical committees in the CIE, and from the International Dark-Sky Association, which has produced many information sheets and other resources (such as slide sets) about the issues. These are listed, along with much other valuable information, on IDA's Web page (www.darksky.org). IDA is a membership based, non-profit organization, with members from 66 countries at present, including South Africa.

NEWS FROM THE UN OFFICE ON BASIC SPACE SCIENCE

Seventh UN/ESA Workshop on Basic Space Science Inaugurated Central American Astronomical Observatory at Tegucigalpa, Honduras

The Seventh United Nations/European Space Agency Workshop on Basic Space Science: Small Astronomical Telescopes and Satellites in Education and Research, was hosted by the Observatorio Astronomico de la Universidad Nacional Autonoma de Honduras on behalf of the Government of Honduras from 16 to 20 June 1997 at Tegucigalpa M.D.C., Honduras. The Workshop was inaugurated by the President of Honduras, Dr. Carlos Roberto Reina Idiaquez, and representatives of the United Nations, the European Space Agency, and The Planetary Society.

The Workshop was attended by more than 80 astronomers and space scientists from 28 countries: Australia, Austria, Canada, Cuba, Colombia, Costa Rica, Egypt, El Salvador, France, Germany, Guatemala, Honduras, India, Indonesia, Italy, Japan, Mexico, Morocco, Nicaragua, Panama, Poland, Slovak Republic, Spain, Sri Lanka, Tunisia, United States of America, Uruguay, and Zambia.

The programme of this Workshop included presentations on (i) the solar system and life on Earth, (ii) front line research with small astronomical telescopes, (iii) astronomical satellite missions and results from their databases, (iv) international and regional cooperation in basic space science, (v) and the inauguration of the Astronomical Observatory for Central America.

Projects considered during the Workshop included:

- (i) the feasibility of the establishment of a World Space Observatory (WSO);
- (ii) the Network of Oriental Robotic Telescope (NORT);
- (iii) a proposed world-wide network of small astronomical telescopes to be preferentially used for observation of variable stars and near-Earth objects; and
- (iv) the completion of education kits to be used in introducing astronomy into the education curricula in developing countries at the high school, college, and university levels.

These developments follow up on the series of basic space science workshops organized since 1991 by the Programme on Space Applications of the United Nations Office for Outer Space Affairs in cooperation with the European Space Agency (ESA).

The annual Workshops on Basic Space Science are intended to contribute to the world-wide development of astronomy and space science. Such Workshops have been organized in India (1991) and Sri Lanka (1995) for Asia and the Pacific, in Costa Rica (1992) and Honduras (1997) for Central America, in Colombia (1992) for South America, in Nigeria (1993) for Africa, in Egypt (1994) for Western Asia, and in Germany (1996) for Europe (<http://www.seas.columbia.edu/~ah297/un-esa/index.html>).

Additional to the benefits of common scientific Workshops, the UN/ESA series has led to the implementation of a number of follow-up projects:

- (i) establishment of an astronomical telescope facility in Sri Lanka;
- (ii) operation of a radio telescope in Colombia,
- (iii) inauguration of the astronomical observatory for Central America in Honduras,
- (iv) refurbishment of the Kottamia telescope in Egypt,
- (v) Egypt's Marshod drill project for the US/Russia Mars Mission 2001, and
- (vi) publication of an urgently needed newsletter (African Skies) for the astronomical community in Africa (<http://da.sao.ac.za:80/~wgssa/>).

Over the past eight years, astronomers and space scientists from more than 120 UN Member States participated at or contributed to the success of the UN/ESA Workshops on Basic Space Science.

The workshops were conducted as part of the activities of the United Nations Space Applications Programme, which promotes awareness of advances in space science and technology and their applications, including new system developments, in developing countries. The Programme conducts an annual series of training courses, seminars, conferences, and workshops on space-related issues. It also administers a long term fellowship programme for in-depth training of specialists in space science and technology, provides technical advisory services on request and is establishing UN-affiliated regional Centres for Space Science and Technology Education around the world with the goal of developing indigenous capabilities (http://www.un.or.at/OOSA_Kiosk/).

The Government of Japan, in cooperation with leading astronomers from the National

Astronomical Observatory of Japan, was particularly supportive of establishing astronomical facilities in developing countries around the world. The astronomical telescope at the Arthur C. Clarke Center in Sri Lanka was donated to Sri Lanka by Japan through the Cultural Grant Aid Programme.

The Governments of Japan and Paraguay, in cooperation with the Vienna-based United Nations Office for Outer Space Affairs, are discussing the establishment of a much-needed astronomical telescope facility at the National University of Paraguay at Asuncion, including the donation of a solar telescope by Japan through its Cultural Aid Grant Programme.

An assessment of the achievements of the series of UN/ESA Workshops on Basic Space Science will be part of the agenda of the forthcoming United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) to be held in Vienna in July 1999.

Hans J. Haubold
Room E0947, UN Outer Space Office
Vienna International Centre
P.O. Box 500, A-1400 Vienna, Austria
Phone: +43-1-21131-4949 (office)
+43-1-21345-4953 (secretary)
Fax : +43-1-21345-5830 (office)
Phone: +43-1-7154347 (home)
E-mail: haubold@ekpvs2.dnet.tuwien.ac.at
hhaubold@solar.stanford.edu
UN/ESA <http://www.seas.columbia.edu/~ah297/un.html>
SIAM/OPSF http://phoenix.wien.rhno.columbia.edu/siam/opsf_new/00index.html

***** Note the new address of the UN/ESA web site, above!

UN/ESA WORKSHOP ON DATA ANALYSIS TECHNIQUES

This workshop was hosted by the Instituto Nacional de Pesquisas Espaciais (INPE) on behalf of the Government of Brazil, 10-14 November, at INPE. It was part of a series of such workshops which UN/ESA have sponsored. Such workshops are very important - especially for young astronomers from developing countries - now that major databases (such as HIPPARCOS) are easily available on CD-ROM or on the World Wide Web.

Unfortunately, I did not learn about this workshop until September, so I could not give advance notice in this Newsletter. I hope that future workshops will be announced well in advance, so that they can be widely publicized. Commission 46 supports the concept of such workshops, and hopes that they can be integrated with similar programs, such as ISYA. - Editor

EDUCATION PAGE ON THE HIPPARCOS WEB SITE

The web site of the Hipparcos satellite (<http://astro.estec.esa.nl/Hipparcos/>) includes not only scientific material, and access to the Hipparcos database; it also includes an education page where students can learn about variable star measurement and analysis by actually working with the data. Check it out!

ASTRONOMY EDUCATION AROUND THE WORLD

AFRICA

The first issue of "African Skies", published under the auspices of the Working Group on Space Science in Africa, coordinated by Peter Martinez and edited by Francois Querci, has now appeared. For more information, see <http://www.saao.ac.za/~wgssa/> or contact wgssa@saao.ac.za

BOSNIA

At the IAU General Assembly, I had the pleasure of meeting Professor Muhamed Muminovic, and receiving a copy of the textbook "Astronomija", which he wrote in the past few years, under very difficult conditions. It is an excellent introduction to astronomy for students at the senior high school and university level. The difficult state of Bosnian astronomy was outlined in Mercury, Vol. 24, No. 2 (March/April 1995) under the subtitle "How Can We Help"?

BRAZIL

The following message comes from Paulo Sergio Bretones, Universidade Estadual de Campinas.

"The Second Brazilian Meeting on Teaching of Astronomy was sponsored by the Universidade Federal do Rio Grande do Sul (UFRGS), November 07-09, 1997. The meeting was held in the Instituto de Fisica of UFRGS and in the Planetarium Prof. Jose Baptista Pereira in Porto Alegre for the celebration of the 25 years of the Planetarium. In parallel with the meeting, the First Meeting of Planetariums of Mercosul and the Second Meeting of the Brazilian Association of Planetariums (ABP) were also held.

There were about 65 participants - school and university teachers, students, planetarians and amateurs. The program consisted of debates, and 22 short communications.

The opening lecture was given by Professor Jose Renan de Medeiros, president of the Brazilian Astronomical Society (SAB). The topic was "Modern Astronomy, Cosmology and Astronomy in Brazil".

The debates were devoted to the following themes: Astronomy: teaching, popularization in the current days, astronomy as an optional discipline at secondary school, production of educational material, the planetariums and the complementation to the teaching/learning process in Astronomy, the work and difficulties. There was a general assembly of the Brazilian Association of Planetariums and a short course for teachers.

Evenings were spent at the opening of an exhibition about the 25 years of the Planetarium of Porto Alegre, a special planetarium show and a visit to the old observatory of the university.

For more information, contact Paulo Sergio Bretones (paulo.bretones@mpcbbs.com.br), Rua Joaquim de Paula Souza, 1168; Jd. Proenca - CEP: 13096-142; Campinas - SP; BRAZIL.

CARIBBEAN

Keachea Dixon (an International Relations student at the University of Toronto) and John Percy are undertaking a project to make contact with astronomy educators in the Caribbean countries. At present, IAU Commission 46 has no contact people in these countries. If you know of astronomers (professional or amateur) or astronomy educators there, please contact John Percy (see address above). We have already made one useful contact in Jamaica.

FORMER SOVIET UNION

At the IAU General Assembly, Professor N.G. Bochkarev (Sternberg Astronomical Institute, Russia) reported on the Euro-Asian Astronomical Society. It includes about 750 astronomers from all over the former Soviet Union, and about 20 other countries. It supports seven publications (scientific, informative, and popular), and holds large, multi-topical meetings. The publications and meetings include many topics related to education and popularization of astronomy. It is remarkable that so many of the astronomical institutes in the former Soviet Union continue to operate, under very difficult conditions. They deserve our support, in the form of books and journals, for instance.

GREECE

The 1997 Summer School in Astronomy, for high school students, was a great success. There are now several commercial sponsors. See the Web site

<http://www.astro.noa.gr/sum-sch/> for details. The next project is a country-wide study of light pollution, from a scientific, technological, and societal point of view. For information, see the Web site <http://www.uoi.gr/english/EPL/LP/lp.htm>

INDIA

Nirupama Raghavan reports that the Nehru Planetarium in Delhi conducted a one-day workshop for schoolteachers, using ideas from sources such as the Astronomical Society of the Pacific's "Universe at Your Fingertips". Such workshops have been a feature of IAU General Assemblies for two decades, and are now being carried out in many other countries such as India.

MOROCCO

The proceedings of "From Quantum Fluctuations to Cosmological Structures" - the First Moroccan School of Astrophysics - held in December 1996, has been published as Volume 126 of the Astronomical Society of the Pacific Conference Series. This represented an important step in the development of astronomy in Morocco.

PHILIPPINES

At the UN/ESA Workshop in Honduras, Bernardo Soriano and Cynthia Celebre presented a report on current and prospective education and research in basic space science in the Philippines in 1997 - the centennial year of astronomy in their country. Present activities included: an information campaign on Comet Hale-Bopp and the 9 March total solar eclipse; development and implementation of an astronomers' course, and a course on telescope-making; a series of regional seminars on basic astronomy for science teachers; a quiz on astronomy for high school and college students; presentation of recognition awards to Filipinos who have made significant contributions to the development and promotion of astronomy. Future activities may include the enhancement of astronomy in the school curriculum, the procurement and installation of telescopes in 15 regional centers, and the development of some basic research capability.

ROMANIA

Romania is looking forward and preparing for the total solar eclipse of August 1999. There are several meetings being proposed for that time and place, including an IAU ISYA, a Summer School in Solar Physics, and the 10th triennial assembly of the International Union of Amateur Astronomers. The Romanian astronomers also have a project to construct a planetarium in Bucharest. They are in need of a projector for an 8.5m diameter dome. If any reader is aware of a source for a projector, please notify Dr. M. Stavinschi (magda@roastro.astro.ro). For more information, see the web site: <http://roastro.astro.ro>

RUSSIA

"The Universe and Ourselves" is an annual magazine, edited by Edward Kononovich (a former President of Commission 46) for teachers, students, and others interested in astronomy. Commission 46 heartily supports the production and distribution of regional publications of this sort. It includes about 20 articles on various aspects of astronomy. I shall include only the editorial, by Professor Kononovich, here:

"Man in the Universe": What do we need the Universe for? Just to penetrate into it by the power of our reason? Or to make use of its huge energy and natural resources? Or to spot a comfortable place to inhabit in the uncertain future? Our fantasy may produce an infinite number of such questions, reflecting our equally-infinite desire and aspirations. Until now, Man has managed to fulfill his every project, sometimes in a time even shorter than could be hoped. We should not speculate on what else he could achieve, and when. But what we do know is the price of such achievements: the human life. What a dull road

to the grave this life would be, had we not been led by our two principal ambitions: to learn about the Universe, and to learn about Man as a feature of the Universe. In other words, humankind lives, prospers, and - let us hope - will conserve itself long enough, thanks to the ambitions of each and every one of us. The stronger they are, the greater our output - that is why they are so dear to us. That is why we call them 'God's gift'".

SINGAPORE

An article in Sky and Telescope, July 1997, describes the efforts of amateur astronomers in Singapore to fight light pollution, and to bring astronomy to the people. There are no professional astronomers in Singapore, but there are many interested and capable amateurs. My contact person is Albert Lim (alim@pacific.net.sg).

SOUTH AFRICA

As part of the symposium "The Stellar Content of the Local Group Galaxies" to be held in Cape Town, 7-10 September 1998, there will be an education workshop on 12 September; for information, contact case@sao.ac.za. [We urge other meeting organizers to include education events as part of the meeting, if appropriate. - Editor]