

BWS

IAU COMMISSION 46: THE TEACHING OF ASTRONOMY NEWSLETTER 48: (Northern) Spring 1998

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The mandate of Commission 46 is "to further the development and improvement of astronomy education at all levels, throughout the world".

Contributions to this newsletter are gratefully received at any time.

MESSAGE FROM THE EDITOR

This will be my last message as Editor of this Newsletter. As was agreed last year, Dr. Barrie Jones, The Open University, UK, will become editor as of now. I know that he can bring new life and ideas to this important link between astronomy educators worldwide. Barrie has been on the staff of The Open University for many years. He has been instrumental in developing very popular and effective "distance education" courses in astronomy. He was a gracious co-host of the 1996 astronomy education colloquium in London UK.

I thank all those who, over the years I have been editor, have helped with the Newsletter by sending me material, and especially Armando Arellano Ferro for distributing the electronic newsletter, Andy Norton for posting it on our web page, and Monique Orine for looking after the administrative arrangements at IAU HQ.

ANOTHER AWARD FOR JULIETA FIERRO

I am pleased to announce that Julieta Fierro, President of Commission 46, is the 1998 winner of the Dorothea Klumpke-Roberts Award of the Astronomical Society of the Pacific, given for outstanding contributions to public understanding and appreciation of astronomy. Here is the citation which will appear in the ASP magazine MERCURY:

Julieta Fierro is well known, to international astronomy educators, as President of the International Astronomical Union's Commission on the Teaching of Astronomy, and an active participant in education conferences all over the world. She was the 1995 winner of UNESCO's Kalinga Award, one of the most prestigious awards for the popularization of science. She is already well known to MERCURY readers for her remarkable cover story "Astronomy on the Streets" in the May/June 1997 issue - written in her characteristic "straight from the heart" style. Her most powerful impact, however, is in Mexico and other Spanish-speaking countries, where she has used all means available to promote public understanding of astronomy, and has done it for all age levels, and for all segments of society. She is the author of 23 books - several of which are used nationally in public and school libraries - and dozens of popular articles. She is a regular contributor to two of Mexico City's largest newspapers, and editor of the monthly magazine "Orion". She is regularly interviewed by the media, and appears on radio and TV virtually every week. She has recently produced a series of TV programs for school children and teachers. She is actively involved in four science centres, has advised and assisted many planetariums in Mexico, and has promoted and assisted many astronomy clubs. She was national co-ordinator for the 1991 total solar eclipse. She has given hundreds of public lectures, in Mexico and around the world. It is not surprising that, when the 200,000 students applying for admission to the Universidad Nacional in 1995 were surveyed about the scientists they knew, most answered that they had only heard of one - Julieta Fierro.

- John R. Percy -

President Fierro has asked me to include the following item which (despite my modesty) I must do. - JRP

DISTINGUISHED EDUCATOR AWARD FOR JOHN PERCY

We are proud to announce that past president of Commission 46 Professor John Percy was granted the Distinguished Educator Award by the Ontario Institute for Studies in Education of the University of Toronto. As you all know, he has worked for better education not for his native Canada, but also worldwide, and that he has achieved a lot

for its improvement. We feel that this award enhances the role of astronomy education, and that few people are more deserving than John Percy. Congratulations.

Julieta Fierro

PROCEEDINGS OF THE 1996 COLLOQUIUM ON ASTRONOMY EDUCATION

I am told that these proceedings have now been published, but I have not seen or received a copy. Patience, please

PROPOSED IAU COLLOQUIUM ON ASTRONOMY EDUCATION

Plans for the proposed IAU Colloquium on Astronomy Education are moving forward. The proposed dates are July 12-16, 1999, with field trips on July 10-11, and a Teachers' Education Day on July 11. The host is the University of Western Sydney, Penrith (near Sydney), Australia. The chair of the Scientific Organizing Committee is Julieta Fierro (address given above).

A SIMPLE METHOD OF DETERMINING STAR MAGNITUDES

Smriti Bhagat, a student at Naval Public School, Chanakyapuri, New Delhi, India, and Nirupama Raghavan, Nehru Planetarium, Teen Murti Bhavan, New Delhi, India, have prepared a short article on an activity to determine star magnitudes with a simple device. We hope to publish it in a future issue of this Newsletter. In the meantime, you can obtain details, or an e-mail copy of the article, from Dr. Raghavan (niru@del2.vsnl.net.in).

Dr. Raghavan has also published a delightful book "Celestial Hide and Seek: The Game of Eclipses" (National Book Trust, India; 1997). It includes many useful activities for young people.

1819: A CURIOUS MANUSCRIPT

T. Cadefau-Surroca and M.A. Catala-Poch. Departament d'Astronomia i Meteorologia, Universitat de Barcelona, Spain (e-mail: tcadefau@pie.xtec.es) have sent a short article "1819: A Curious Manuscript" which may be published in a future newsletter. It deals with the analysis of the astronomical content of a document, originally written in Catalan, but here translated into English. If you would like information about the article, you can e-mail the authors.

HANDS-ON ASTROPHYSICS

The American Association of Variable Star Observers (AAVSO) has now completed "Hands-on Astrophysics" - an educational project to use variable star observing and analysis to develop and integrate science and math skills in high school. The activities range from observation of bright variable stars in the real sky, to classroom activities with prints and slides, to analysis of new or existing data with sophisticated but user-friendly software. The project includes data, software, charts, instructional videos, prints and slides, and a wonderful 500-page manual for students and teachers. For more information, check the AAVSO web site (<http://www.aavso.org>) or e-mail aavso@aavso.org

ASTRONOMY IN JAMAICA

The following report was prepared by Keachea Dixon, an International Relations student at the University of Toronto, on the basis of two visits to her home country. I had the pleasure of working with her this year. - JRP

Introduction

Astronomy education in Jamaica is minimal and does not exist formally below the University level. The education system is based on that of the British system and as such the schools focus on courses that prepare students for the various external exams at the different levels of schooling. The science courses that are taught in high schools include physics, chemistry, zoology and biology. At the high school level students receive their first introduction to the different branches of science education yet students do not learn anything substantial about astronomy. At the University level, astronomy education is very minimal compared to universities internationally as it has only one astronomy course at the final level of a three year physics program. This astronomy course is a ten lecture course which is an option for the students - one which few choose. Despite the low levels of formal astronomy education, Jamaica has many amateur astronomers. The professional people are very interested in astronomy and as such they have formed a club called the Astronomical Association Of Jamaica.

Astronomical Association Of Jamaica

The astronomical association has a membership of fifty (mostly) professionals, some of who are retired. They have meetings once a month on the last Tuesday. They advance their knowledge of astronomy and that of others in the community by going on expeditions and holding an annual Astronomy Day. Last year Astronomy Day was held on the University Of The West Indies campus in collaboration with other groups on campus such as the physics department. The outcome was very good. It indicated that many individuals are intrigued and interested in astronomy. However, there was no follow up. This year the aim of the association is to induce an adequate follow up approach. The resources at hand for the association include a 6" telescope and a few binoculars. A few members have 8" to 10" telescopes and their own binoculars.

The association helps the community by holding talks on topics related to astronomy, writing articles for local community papers and educating the public via the radio on

solar eclipses: what to do and not to do when one occurs. The Astronomical Association has a theme that they adopt each year and this year the theme is the Sun. The AAJ will pursue projects defining "The Year Of The Sun". observing the sun and understanding its role and scientific importance at the centre of our solar system. This year the president of the association Mr. Walling plans to begin a project introducing astronomy education to the public and in the schools.

Astronomy Resources Available In The Country

The country has a portable planetarium and a 21" telescope on Stony Hill. The University of the West Indies at Mona owns a 12" telescope (about the minimum necessary for research).

There are very few teachers who have the knowledge to teach astronomy to students. Currently, there is only one individual doing graduate studies in astronomy; incidentally, this individual is also the first to do graduate studies in pure astronomy, as students prior did astrophysics.

Keachea Dixon

NEWS FROM THE UNITED NATIONS:

UNISPACE III

UNISPACE III - the third UN conference on space activities - will be convened at the UN Vienna Headquarters from 19 to 30 July 1999. Many other organizations, including the IAU, have been invited to collaborate in organizing meetings, both within UNISPACE III, and as satellite meetings. In particular, the IAU is considering co-organizing a one-day session on education in basic space science, including astronomy. If you have suggestions about the content of such a session, please let the president Julieta Fierro, or Hans Haubold (address given below) know.

WORKSHOP ON DATA ANALYSIS

(Report by H.J. Haubold, UN Office Vienna, Austria)

The United Nations/European Space Agency/Committee on Space Research Workshop on Data Analysis Techniques was hosted, on behalf of the Governemt of Brazil, by the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais, INPE) at Sao Jose dos Campos, Brazil, from 10 to 14 November 1997.

The Workshop was attended by more than 50 space scientists from 20 countries: Argentina, Austria, Brazil, Chile, China, Ecuador, France, Germany, India, Indonesia, Lebanon, Nigeria, Palestine, Paraguay, Slovak Republic, Sri Lanka, Syria, Thailand, United States of America, and Uruguay.

The programme of the workshop included presentations on data analysis and processing,

from basic concepts through least-squares and Fourier-based analysis up to the latest concepts in neural network and wavelet techniques. The objective of the workshop was to provide participants with an expert knowledge of the tools available for access, analysis, and interpretation of data acquired by digital data acquisition systems (and beamed down by satellites) for a variety of educational and scientific applications. The presentations focused on promoting understanding of the concepts involved through "mechanical means" rather than mathematics and their implementation in applications of image processing and data analysis in remote sensing, satellite meteorology, and astronomy. The workshop also evaluated the advances that have been taken place since its first deliberations on this subject during the XVIIth Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) at Washington, D.C., USA, from 2 to 14 August 1992 (Proceedings available on request).

Discussions during the workshop addressed available computer software systems and languages. In the 1970s through the mid-1980s, the situation in scientific computing had undergone an extraordinary broadening. Available technology had moved from the single campus computer to widely available minicomputers (workstations) and the personal computer (PC). However, a language-neutral environment, in which scientific programming could be accomplished in any available computer language, was missing. Over the years, a number of programming languages (Fortran, C, ...) started dominating scientific computing with a growing minority of scientists using Interactive Data Language (IDL), Mathematica, and similar integrated total environments. Further, programming languages like Fortran were gradually upgraded and designed to produce code that can be parallelized on computers with multiple processors. Integrated total environments consisted of intrinsically higher-level programming languages. Eventually, IDL, Mathematica, and Fortran 90 (complemented by Numerical Recipes) are emerging as comparably high-level programming languages.

Since 1990, the United Nations Office for Outer Space Affairs, through its Programme on Space Applications, pursues the initiative of establishing regional Centres for Space Science and Technology Education (Affiliated to the United Nations) in developing countries. The concept behind these centres is based on the fundamental notion that it is vital for developing countries to have personnel educated in the use of space science and technology, particularly those applications relevant to their national development programmes such as remote sensing, satellite meteorology and the use of geographic information systems (GIS), space communications, and basic space science. Plans for the establishment of such centres, one in Latin America and the Caribbean (Brazil and Mexico), one in Western Asia, and one each in the francophone (Morocco) and anglophone (Nigeria) region of Africa, are nearing completion. The Centre for Space Science and Technology Education for Asia and the Pacific (Affiliated to the United Nations), has been established in India in 1995. The Centre has its campus at the Indian Institute of Remote Sensing (IIRS), Dehradun, India. The Centre uses the infrastructure available at IIRS for conducting nine-month courses in remote sensing and GIS; at the Space Applications Centre, Ahmedabad, for nine-month courses on satellite communications and satellite meteorology; and at the Physical Research Laboratory, Ahmedabad, for courses in basic space science.

The data management units of the above centres will be linked to global data bases and shall be responsible for data needs at the centres. This includes data collection, key entry, programming, operations and maintenance of data bases, programmes, and hardware. Accordingly, the workshop did elaborate on image processing and data analysis techniques as part of available computer software systems and languages. In this connection, the workshop highlighted (i) the Interactive Data Language (IDL) as a complete computing environment for the interactive analysis and visualization of data (<http://www.rsinc.com>), (ii) INPE's SPRING (Sistema de Processamento de Informacoes Geograficas) as a state-of-the-art GIS and remote sensing image processing system with an object-oriented data model which provides for the integration of raster and vector data representations in a single environment (<http://sputnik.dpi.inpe.br/spring>), and (iii) the European Southern Observatory's MIDAS (Munich Image Data Analysis System) system which is built along lines which allow easy integration of complex analysis algorithms as well as allows great flexibility in interactive use and in the creation of user specific procedures from the available basic building blocks (<http://www.eso.org/research/data-man/data-proc/systems/esomid/midas.html>). For simple reasons the software systems in (ii) and (iii) have been recommended for use at the regional Centres for Space Science and Technology Education (Affiliated to the United Nations) around the world.

The workshop was held in the spirit of the seven UN/ESA Workshops on Basic Space Science, organized annually since 1991 for the benefit of the worldwide development of astronomy (<http://www.seas.columbia.edu/~ah297/un.html>).

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REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION

Another communication from Dr. Haubold, on January 1, 1998, describes the concept of regional centres for space science and technology education, including one for Asia and the Pacific, located in Dehra Dun, India. Also, from 1 June 1998 to 30 November 1998, the fifth graduate course on space science will be conducted at the Physical Research Laboratory, Navrangpura, Ahmedabad, India. For further information, contact Dr. Haubold, or see the web site listed above.

NEWS FROM THE ASTRONOMICAL SOCIETY OF THE PACIFIC

The 1998 meeting of the Astronomical Society of the Pacific will be held in Albuquerque NM June 25 to July 1, 1998. It includes a national teachers' workshop for grades 3-12 (June 25-26), a symposium on Teaching Astronomy to Non-Science Majors (June 29-30), as well as meetings and events for researchers and the public. For information, contact lkeechler@aspsky.org or visit the ASP web site (<http://www.aspsky.org>).

The ASP also has extensive teaching resources on its web site, including back issues of many of its famous teachers' newsletters. Check it out!

PARTNERS IN ASTRONOMY

John Percy, and the University of Toronto, are pleased to be hosting a major conference on this theme - a joint meeting of the Astronomical Society of the Pacific, the Royal Astronomical Society of Canada, and the American Association of Variable Star Observers, in Toronto, Canada, July 1-7, 1999. The meeting will include a variety of sessions for scientists, teachers, historians, amateur astronomers, students, and the public. The meeting will feature a three-day international symposium on "Amateur-Professional Partnership in Astronomical Research and Education". All are welcome. For general information about the program, contact John Percy (e-mail address given above). Registration will be through the ASP.

FROM CENTRAL AMERICA

Astronomers (young and old) from Central America converged on Panama in the week of the total solar eclipse to hold their fourth annual Course and Conference in Astronomy and Astrophysics (IV CURCAA). Commission 46 president Julieta Fierro was a distinguished visitor and speaker. I (JRP) attempted to join the meeting by videoconference, but the link was very weak. I did see Julieta in the front row of the auditorium, and I did see a photo of the total eclipse which had been successfully taken during the meeting. I congratulate the organizers of the meeting - especially the scientists and technicians who worked long and hard to try to set up the video link.

FROM GREECE

Dr. Margaret Metaxa (mmetaxa@compulink.gr) reports that the international light pollution education program is progressing well. It includes 630 students and 71 teachers in 37 schools in six countries. Already, one school (in Spain) has succeeded in convincing the local mayor to agree to draw up a by-law whose aim is the protection of the night sky. There will be light pollution seminars in Manchester in April, in Athens and in Crete in May. For more information, see the web site: <http://www.uoi.gr/english/EPL/LP/lp.htm>

FROM MALAYSIA

The 6 March 1998 issue of Science (volume 279, page 1479) includes a special section on "Science in Southeast Asia". There is an excellent half-page profile on Mazlan Othman, national representative to IAU Commission 46. It outlines her work in education in astronomy, in the schools and for the public - including her development of the planetarium in Kuala Lumpur. It goes on to describe her success in developing a space program for her country, including the training of space scientists and engineers. She is also a Full Professor at her university - appropriate recognition of her distinguished academic career. Congratulations to Mazlan for being profiled in this journal which is read by hundreds of thousands of people.

FROM PERU

The first meeting of Young Peruvian Astronomers was held January 5, 1998, on the campus of the Universidad Nacional Mayor de San Marcos, in Lima. This is a project of the Seminario Permanente de Astronomia y Ciencias Espaciales (SPACE). SPACE has benefitted greatly from the support of the IAU Visiting Lecturer Program, which was active in Peru for many years. The program of the January 1998 meeting included eight speakers, on a variety of interesting scientific topics.

IAU WORKING GROUP FOR THE WORLDWIDE DEVELOPMENT OF ASTRONOMY

The following newsletter is prepared and distributed by Dr. Alan Batten. His group works closely with Commission 46. Its mandate is development, and includes research as well as education.

1. Introduction

Following my practice of earlier years, I am sending an annual newsletter to those I know to be interested in the Working Group. If anyone wishes not to receive future letters, please let me know.

Members and Consultants remain unchanged from last year, except that H. Jorgensen (Denmark) and J.R. Percy (Canada), who were members by virtue of being Presidents of Commissions 38 and 46, respectively, have been replaced by their successors in those offices, M.S. Roberts (U.S.A.) and J. Fierro (Mexico). The other members are: J.B. Hearnshaw (New Zealand), B. Hidayat (Indonesia), Y. Kozai (Japan), D. McNally (U.K.), M.C. Pineda de Carias (Honduras) and D.G. Wentzel (U.S.A.). I am particularly pleased that S. Raither of UNESCO has again agreed to serve as a consultant. I also keep in close touch with H.J. Haubold of the UN Office for Outer Space Affairs in Vienna.

2. IAU General Assemblies

Many of you took part in Joint Discussion 20 in Kyoto last August. This was organized by our WG, in cooperation with Commissions 38, 41 and 46. Over 20 papers were presented orally and there were also 10 poster papers. The oral papers and a brief account of the discussion will appear in Volume 11 of Highlights in Astronomy, which is now in press. Abstracts of the poster papers were printed in the Abstract Book, available at the General Assembly, and the full texts of some of them will appear in the Bulletin of the International Association of Amateur and Professional Photometrists.

During the lunch break of the Joint Discussion, members of the Working Group discussed several aspects of the Group's activities, including preliminary plans for the XXIV General Assembly to be held in Manchester, U.K., in the year 2000. We are working on a proposal for a full-scale symposium on Astronomy in Developing Countries. Such a symposium requires approval from the IAU Executive Committee, which will not formally consider proposals before 1999. We are, however, already exploring possibilities.

3. Future of the Newsletter

Another matter we discussed in Kyoto was a possible merger of this Newsletter with that circulated by Commission 46. No firm decision was reached and neither side was ready for such a step this year. Reactions to the proposal will be welcome. As an experiment, I will send a number of copies of this Newsletter by e-mail, but I will continue to use ordinary mail for those who are dependent on it. I would appreciate hearing from e-mail recipients that they have, in fact, received the Newsletter.

4. Chairman's Activities

In previous years, the work of the Group has kept me travelling and I began this year by going to Honduras in June and to Japan (both Kyoto and to the public observatory in Bisei, for an amateur-professional workshop) in August. Since then, however, I have stayed at home in Victoria, preparing the proceedings of Joint Discussion 20 for publication, discussing preliminary plans for the symposium mentioned above and also discussing with IAU officers some of the ways in which the Union's support for astronomy in developing countries may change. Both the General Secretary and the Assistant General Secretary have assured me that they regard such support as an important part of the Union's activities. Next year there is to be the UNISPACE III conference in Vienna, Austria, under the auspices of the United Nations, but with IAU participation. Another plan engaging our attention at present is a proposal by J.V. Narlikar (India) for networking in third-world countries. His proposal grows out of the talk he gave in Kyoto, which some of you heard.

5. Specific Countries and Regions

(i) Africa: An important development at the Bonn UN/ESA Workshop held in 1996 was the formation of a Working Group on Basic Space Science in Africa. During 1997, this Group organized itself and produced its first newsletter. African astronomers, outside South Africa and Egypt, are often isolated, and this continental cooperation is potentially

of great value. Coordinator of the new Group is Peter Martinez in Cape Town (peter@uctvms.uct.ac.za) and Editor of the newsletter is F.R. Querci in Toulouse (querci@srvdec.obs.mip.fr).

(ii) Jordan: In May 1998 there is to be the first annual course on astronomy and astrophysics at Al al-Bayt University. The Chairman was invited but was, unfortunately, unable to accept. However, J. Fierro is planning to go as a representative of the Working Group.

(iii) Central America: A consortium of Central American Countries was admitted to the IAU in Kyoto. The Central American Observatory in Tegucigalpa, Honduras, was officially opened last June, during the UN/ESA Workshop. The Chairman was present. Activities of the Central American Association for Astronomy and Astrophysics continue especially, this year, in connection with the recent total solar eclipse (the track of totality crossed Panama). The IAU's TAD (Teaching for Astronomy Development) programme has begun.

(iv) Viet Nam: The IAU TAD programme is also operating in this country.

(v) Philippines: The Chairman keeps in touch with Mrs C. Celebre, who is working to develop astronomy in the Philippines, with assistance from Japanese astronomers.

(vi) India: The Chairman's attention has been drawn to the proposed six-month graduate course in Space Science to be held in Ahmedabad from June 1st to November 30th, 1998, under the auspices of the UN Centre for Space Science and Technology for Asia and the Pacific in Dehradun. Although the formal deadline for applications is passed, anyone interested should contact the Director, Physical Research Laboratory, Navrangpura, Ahmedabad 380 009, India, as soon as possible.

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