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

Newsletter 61 – October 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.

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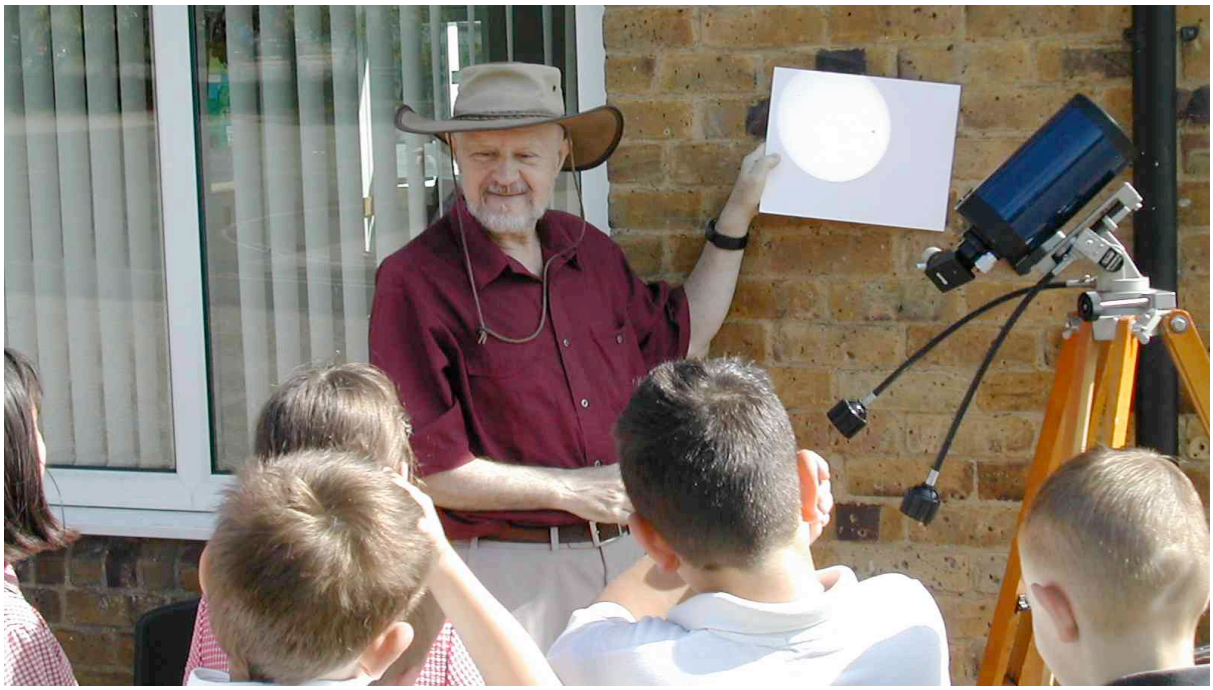
EDITORIAL

Thanks to everyone who has made a contribution to this edition of the Newsletter. For the March 2005 issue the copy date is **Friday 18 March**. If you can include photos or illustrations with any material, please do so.

Progress is being made with improvement of the C46 website. I thank our President and several other people who have made suggestions in response to my requests and otherwise. The work is fairly laborious and Tracey Moore and I have a limited amount of time that we can devote to it. Nevertheless, considerable progress has been made, but there is more still to do.



Barrie W Jones at his wife's school in Milton Keynes, UK, projecting an image of the transit of Venus

Since the last Newsletter in March 2004 we have had the transit of Venus. The southern UK was blessed with clear blue skies, little wind, and temperatures in the mid twenties Celsius. The whole transit was seen, from the early hours to the early afternoon. I spent some of the time at my wife Anne's school, showing the projected image to 280 children in groups of about 8! Anne had briefed them at the morning assembly and I re-enforced some of that and responded to questions from children who, in the main, were fascinated by the transit. I must admit that I too was fascinated, more so than I had expected. After all, as a veteran of several total solar eclipses in exotic parts of the world, what was a little black disc on the Sun in Milton Keynes? Not so – I look forward to the next one in 2012.

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

MESSAGE FROM THE PRESIDENT

It is interesting to see the activity of various program groups of Commission 46. The interval since the last Newsletter saw the 8 June 2004 transit of Venus, the first such transit since 1882. It was the subject of worldwide interest, including a major educational program for schoolchildren across Europe run by the European Southern Observatory. My program group on Public Education at the Times of Eclipses added the transit of Venus to its tasks, and we run a Website at http://www.transitofvenus.info with lots of images and reports on activity, in addition to links to other relevant sites, including that of ESO. This program group also runs a Website at http://www.eclipses.info, providing information on how to observe eclipses safely and providing links to maps, images, and other information. Links to images – including my own – of the 14 October 2004 partial solar eclipse observed from Hawaii are there, for example. Maps are also linked for the 8 April 2004 Pacific-Ocean hybrid annular/total eclipse, and for 3 October 2004's annular solar eclipse that will cross Spain and northeast Africa, with partial phases widely observable in Europe and Africa.

John Hearnshaw's program group on the Worldwide Development of Astronomy has been very active. They have made progress on membership in the IAU for Mongolia. We are also working with a Kenyan astronomer Dr Paul Baki about improving the situation for astronomy in that country. John Hearnshaw and Julieta Fierro are about to visit Cuba.

Michele Gerbaldi's program group on International Schools for Young Astronomers had a success this past summer in Morocco and is now planning a school for Mexico in the summer of 2005.

Though the IAU General Assembly of August 2006 may seem far off, we have already passed deadlines for proposals for colloquia, symposia, and special sessions. We have proposals from our own commission being worked on by John Hearnshaw, Margarita Metaxa, and Rosa Ros. I hope you join me in being grateful for their hard work on these proposals. We are also asked to endorse proposals from other commissions, and we are currently discussing the type of proposals we can endorse – certainly endorsing those that have major educational aspects themselves, perhaps involving the training of students – but perhaps not endorsing those that ask only for widespread education of astronomers on IAU decisions or conventions.

Barrie Jones and Tracey Moore at the Open University are working hard in liaison with our membership and in providing and distributing this membership. We have worked together in improving our website (www.astronomyeducation.org) and with various program group chairs to try to clarify responsibilities and the roles of the different program groups. I thank them on our behalf.

It was my pleasure to give a talk, largely about the work of this IAU Commission, at JENAM 2004 (the Joint European and National (Spanish, this time) Astronomy Meeting, in Granada, Spain, in September. Magda Stavinschi chaired the session and worked hard in organizing a set of sessions, with results to be published in a separate Proceedings book.

John Percy continues to work hard on the Proceedings of our Sydney Joint Discussion session, which is just going to press at Cambridge University Press under a title something like Effective Teaching and Learning of Astronomy. I am pleased to be co-editor. I hope that the book finds widespread circulation and use.

I'll be glad to hear from any readers of this newsletter. I hope it receives distribution to many teachers of astronomy and others in all the countries of our membership and beyond.

With best wishes
Jay M Pasachoff
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ACTIVITIES IN FINLAND

General Information Astronomy is maintaining its popularity in Finland, and the membership counts in amateur astronomical societies keep rising.

Elementary and Secondary Schools In elementary schools, astronomical subjects are only touched on in the geography or physics courses. In the secondary level, many schools give special astronomy courses; two textbooks have been published for that use. The Astronomical Association Ursa has organized an astronomy exhibition for schools in Helsinki Museum of Technology that has been visited by over 10 000 pupils from May 2004 until this day.

University Education Finland has become a member of ESO in 2004, and this may be reflected in research and teaching activities in the universities. About 300 students attended the latest yearly basic course of astronomy in Helsinki University, and similar courses are lectured in Turku and Oulu Universities, as well as in half a dozen other localities.

Public Education Ursa Astronomical Association continues its strong role in public astronomy education, and its membership has risen to over 12 000 at the end of 2004. Ursa organized an international astronomy and space exhibition in November 2003 together with ESA and ESO, which was attended by ca. 10000 visitors in just three days. Attendance at Ursa's portable planetaria has been 5500 (4000 primary and secondary school pupils) last year. Ursa's popular internet site is found at http://www.ursa.fi/

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ACTIVITIES IN GREECE

In Greece a Light Pollution Conference, which was part of the Light Pollution and Youth program proposed by the B'Tositseio-Arsakeio Lyceum of Ekali, and endorsed under the Participation Programme of UNESCO for 2002-2203, was held in Athens, on 27 November 2003. This programme is a continuation of our common efforts, begun in 1997, to encourage young people/students and the general public to become familiar with the night sky, and through this to increase awareness of the effects of light pollution and encourage attempts to influence planning authorities to produce efficient and effective lighting schemes. Well-designed lights will not only cut down light pollution, but will also save energy and protect the environment. Curing light pollution saves money while reducing glare. Unlike other issues involving pollution, it presents us with a rare case where we should strive to be kept in the dark. The stars above us are a priceless heritage – not only for scientific knowledge, but also for our identity as human beings. The Conference was attended by 250 people and also had the valuable presence of scientists who are working towards the solution to this problem. For this I am particularly grateful to UNESCO, the International Dark Sky Association for support, and also all the members of the Scientific Organizing Committee. This comprised Dr David Crawford, Dr Jim Cohen, Professor Jay M Pasachoff, Dr Syuoso Isobe, Professor John Percy, Dr Duco A Schreuder, Dr Malcom Smith, and Dr Stephen M Pompea And of course I thank all our distinguished speakers, some of them traveled long distances to be with us. Finally I would like to thank my school Filekpaideutiki Etereia for all the support and infrastructure and especially the President of our school and Rector of the University of Athens, Professor George Babiniotis. For further information see http://www.arsakeio.gr/lpyouth

There were activities concerning the Venus transit in June 2004. Greece participated in the VT-2004 programme organizing local observations according to the programme's guidelines. For further details

see http://www.vt-2004.org

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ACTIVITIES IN GUATEMALA

THE MAYA TRADITION

In Guatemala the Maya Civilization developed a good calendar based on accurate astronomical observations. Unfortunately, today there are few records of these observations, mainly spread around the world and museums in documents that survived the fire of the conquerors. The archaeologists and archaeo-astronomers are continuously making new discoveries related to the astronomy knowledge of the Maya Unfortunately there is no continuity between this ancient astronomy and the modern astronomy.

THE CURCAA

On 23 April 1993, representatives of Central American state universities gathered in Tegucigalpa, Honduras with the aim of constructing an assembly of professionals willing to work together in order to develop astronomy and astrophysics in every aspect through international cooperation. The Central American Assembly of Astronomers (AAAC) was created. It has its own regulations and is recognized by the International Astronomical Union (IAU).

Before the formation of the AAAC, the Central American Astronomy and Astrophysics Courses (CURCAA) were organized under the auspices of the state universities of every country of the region, and with the sponsorship of different international organizations, research centres, observatories, and foreign universities.

In the first two CURCAAs there was limited participation from the academic world. But in 1997 when the courses were in Guatemala for the first time there was an astronomy course in our universities and we had the participation of about 30 university students (physics and engineering), 30 high school teachers, and several amateurs. All took the same courses.

Previously in the eighties we had only an elementary course for high school teachers, with limited contents (mainly devoted to elementary physics) and participation. I was first involved with the CURCAA here in Guatemala because I organized a conference on cosmology. Then the same year during the UN/ESA workshop in Tegucigalpa Honduras I gave a brief presentation of our present situation, as follows.

> "In Guatemala there are two universities with physics programs, Universidad del Valle (UDV) and Universidad de San Carlos (USAC), plus one amateur astronomy association. In USAC the courses have a nuclear physics orientation and there are no astronomy courses. There is a program for the development of physics teaching at high school level in collaboration with Utrecht University. There is a library in the USAC Physics Department with some books on astronomy. There are cooperation agreements signed with other universities but with limited activities. But we are trying to change this situation.
>
> We are making changes in our physics curriculum, and we will include two courses on astronomy and probably one on astrophysics. This new program will be for next year (we hope!). We will use astronomy for promoting our physics program in high schools. We will try to get cooperation between our Department and the amateur associations. The first astronomy activity after the third CURCAA will be a series of conferences dictated by Dr Julieta Fierro from the Universidad Nacional Autónoma de México during a week for our physics students."

PROGRESS SINCE 1997

The most relevant changes over the following years are that in 1998 we implemented at Universidad de San Carlos an elementary course in astronomy during the second semester of the physics curriculum (based on Zeilik's book Conceptual Astronomy), and since 1999 we have an intermediate course in astronomy (based on Karttunen's book Fundamental Astronomy). In 1999 we organized a Central America and Caribbean Physics Course with elementary particle physics as a major topic, but we included a course named Observational Limits in Astrophysics and Cosmology given by Stefano Borgani (then at INFN-Sezione di Trieste). This course was devoted to physics students. Two courses, Some Teaching Techniques for Teaching Astronomy at High Schools Level, given by Javier Bonatti from Universidad de Costa Rica and Our Place in the Universe given by Armando Arellano from UNAM, were aimed at high school teachers.

Our first Licenciatura degree thesis, astronomy and astrophysics related, was Application of ADM Lagrangian Formalism to a Cosmological Model by Enrique Pazos (2000) with the support of CLAF-M (Latin American Centre for Physics-México). The latest one was T-Tauri Stars Variability Searching in the Orion Region by Eduardo Rubio Herrera (2002) under the supervision of Armando Arellano and myself with the support of Instituto de Astronomia UNAM, National Science and Technology Council, CONCYT, and IAU Commission 46.

We are beginning a masters degree in physics with two initial orientations, elementary particle physics, and nuclear physics. We are trying to add astrophysics and medical physics in the near future. We are also trying to increase our ever low numbers of physics students by making short courses in astronomy for high school students in order to attract them to the study of physics and astronomy. This is being done with the collaboration of our physics students. Since 1998 we have had a regular series of physics talks given by final year students, professors, and visiting scientist and professors. The talks include astronomy and astrophysics topics.

We will increase our student participation in future CURCAAs.

THE NEXT CURCAA

In November this year we will develop our second CURCAA in Guatemala and we hope to increase the participation of both our physics students and the students of other Central American countries. For the first time we will include a special course for high school teachers in order to improve their usually scarce knowledge in astronomy and to promote an increase in astronomy topics in high school programs.

SOLAR ECLIPSES

In 1991 we had the opportunity to observe a total solar eclipse in practically all the country, but unfortunately we did not take advantage of the occasion to spread information about the event. This was done by the media, principally television, that advised people to observe the phenomena on television screens instead of directly, thus losing the opportunity of observing a beautiful spectacle in the sky. The reason was to protect the public from blindness caused by incorrect observing techniques. Next year there will be another solar eclipse over our country, and under the suggestion of Professor Jay Pasachoff we will try to organize for the first time a campaign of observations of the phenomena safely and joyfully.

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ACTIVITIES IN PARAGUAY

AN EVENT IN MEMORY OF AN OUTSTANDING IAU MEMBER IN PARAGUAY

At the Instituto Superior de Educacion (ISE), on 31 July 2004 at 0700 (Paraguaian time), the National Physics Olympiad was opened. This annual event is supported by the Faculdad de Ciencias Exactas y Naturales, Universidad Nacional de Asuncion (FACEN-UNA), Instituto Superior de Educacion (ISE) and the Asociacion de Fisicos del Paraguay. These institutions invited the higher educational authorities from our country to attend. This year, the National Physics Olympiad was dedicated to the memory of IAU member Professor Alexis Emilio Troche Boggino.

IMPACT OF PROFESSOR ALEXIS E TROCHE BOGGINO AND HIS PROGRAMS ON MY LIFE

Professor Troche Boggino encouraged me to attend all the IAU Visiting Lecturers Program (VLP) courses (1986-1994), and the International School for Young Astronomers (ISYA) in 1995 at the winter (austral) course in Brazil. During all these years, I was vice-president of the Sociedad de Estudios Astronomicos. In 1997, I started to teach astronomy at the Instituto Superior de Educacion for middle school science teachers. When our Department of Physics and the area of Natural Sciences need some help with their curricula, I suggested including Astronomy in both of them, and the authorities of the Institute approved it. I am presently a member of the Astronomical Society of the Pacific. In 2003, I wrote, with two other partners, the book Fisica 1, for Secondary Schools, published by Fundacion en Alianza (the first edition sold out in four months), including an entire thematic strand with astronomy content, called Universe. A text called Fisica 2 for the second grade of the secondary level, also with a complete strand called Universe, will be published in about four months. In 2003 I completed a postgraduate program in Educational Administration. All these years I gave Workshops for Science Teachers. Presently, I'm the coordinator of the project OBSERVAMOS (see below).

FIRST MIDDLE SCHOOL OBSERVATORY IN PARAGUAY

I'm happy to announce that I'm carrying out, at the Nihon Gakko School, the Project OBSERVAMOS – OBSERVATORIO MODELO ESCOLAR. The goal of the project OBSERVAMOS is to equip the Nihon Gakko School (by the end of 2005 at the latest), with a modest School Observatory for education and outreach. One of the teachers at the school was my student of astronomy at the ISE, and is very interested in the project, of course. The principal has informed the students and staff that the school would have an observatory in the very near future. The President of the country, and visiting astronomers may even be invited to the inauguration!

The observatory will be located at the top of the building. Under it there will be some room to house visiting astronomers and others

The project OBSERVAMOS is divided in five parts. First, the selection of an adequate physical place, telescope and accessories, the construction of a roll-off and roll-on shed able to accommodate the instrument, and the construction of a room for astronomy talks with multimedia projection, and for communication to the press. The facility also has some broadcasting equipment. A Meade LX200 GPS-SMT f/10 14 inch (36 cm) telescope has been ordered. A travelling telescope may also be acquired, to serve more distant communities. The observatory will probably be situated on top of one of the school's buildings, for reasons of best horizon, availability, security, and access to electricity and Internet connection. Air currents, and the isolation of the pier are possible problems in the short term, and light pollution may be a problem in the future.

Second, the development of an astronomy course for beginners (including theory and observation). This course is in preparation.

Third, inclusion of a program of astronomical observations as a part of the Annual Planning of the School (centred on the interest of the school students).

Fourth, to arrive at a consensus with other institutions about a viable cooperative project of astronomical observations (for example, observational nets of celestial objects with school students from other nations). No contacts have been made yet; contacts and suggestions would be welcome!

Fifth, to house visiting astronomers and exchange students, during important astronomical events or as a part of astronomical projects in common.

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ASTRONOMY IN THE PEOPLE'S REPUBLIC OF MONGOLIA

INTRODUCTION

I visited Mongolia for one week in mid-March 2004 as chairperson of the IAU Commission 46 Program Group for the World-wide Development of Astronomy (PGWWDA). The purpose of my visit was to assess the current situation in Mongolia concerning astronomical teaching and research and to make appropriate recommendations to the IAU on possible future development of astronomy in that country.

John Hearnshaw at a lookout on Mt Zaisan Tolgoi, overlooking the city of Ulaanbaatar

The host for my visit was Professor G Batsukh, professor of geophysics at the National University of Mongolia. He is one of three academics at NUM who are involved with the teaching of astronomy at

undergraduate level. Although Mongolia has seven state universities, NUM is the most prestigious, and its program encompasses a wide range of technical and scientific fields. NUM was founded in 1942 and has some 10 000 students and 600 academic staff.

Mongolia is a vast land-locked country lying between China and Russia in eastern Asia. The country is some 1300 km from north to south and 2400 km from east to west and comprises 1 556 500 square km. The population is only 2.6 million, making the average population density one of the lowest in the world. The terrain varies from arid (Gobi desert) in the south-east, to lightly forested in the north. The west is very mountainous, but mountains occur throughout much of the country.

The climate is continental and exceedingly harsh. In January the mean temperature is –28° C, in July it is +25° C. For March when I was there the day-time temperature was within a few degrees of zero. Mongolia has a climate most conducive for observational astronomy; there are some 250 sunny days a year, the air is always very dry and industrial and light pollution are mainly almost absent.

One quarter of the population lives in Ulaanbaatar; there are a few other cities, but of lesser importance. A large fraction of the population is nomadic herdsmen who live in tents (gers) and who own horses, sheep, yaks, goats, cattle or camels. In spite of that, the literacy rate is fairly high at nearly 90 per cent.

Although Mongolia is a Buddhist nation, religious activities do not dominate everyday life. In particular, Mongolian women appear to be very emancipated and they play a full and active role in university life and in society in general. Mongolia has a long and proud cultural history dating back to Ghengis Khan in the 12th to 13th centuries, and it was a monarchy for several centuries until 1921. The last king was the eighth Bogd Khan, whose former palace in U.B. is now a museum. Included in this Buddhist cultural tradition there is a reverence for astronomy and learning.

The country, which is now a parliamentary democracy (since 1991), is developing fast, and this is especially obvious in Ulaanbaatar, where there is much construction going on. Many western experts are providing technical expertise and advice under various aid programs.

John Hearnshaw dining with members of the Dept of Geophysics of the National University of Mongolia, and their spouses. Prof Batsukh, the head of the department, is furthest from the camera on the left

ASTRONOMY IN MONGOLIA

National University of Mongolia (NUM)

The National University of Mongolia is in central U.B. on a site comprising about four large buildings. The infrastructure and facilities appeared to be good for a developing country. Certainly there were a

large number of desktop personal computers everywhere I went, and the technology of laptops and data projectors was readily available for presentations.

NUM has a School of Physics and Electronics within which is located the Department of Geophysics of which Prof Batsukh is head. Prof Batsukh and two other staff members teach astronomy at undergraduate level. One of these is Dr Ulaanbaatar (his name is the same as the capital city!) and another is Prof Lhagvajav, who is head of the School of Physics and Electronics.

Dr T Ulaanbaatar, who lectures in geophysics and astronomy at the National University, standing outside the Khurel Togoot Observatory of the Mongolian Academy of Sciences. The observatory is in the hills some 20 km east of Ulaanbaatar

There are some 80 undergraduates majoring in geophysics and these graduate with a bachelor's degree after four years. Astronomy and astrophysics courses are compulsory credits for this degree. In addition there are four optional courses in astronomy that can be taken. They are planetology, astronomy of galaxies, stellar astronomy, and applied astrophysics.

The Geophysics Department was founded in 1978 and atmospheric physics research has been a major interest since that time. However new fields of research are opening up, and remote sensing using satellite data was one new area being currently pursued. The Geophysics Department is divided into four sections: atmospheric research, plate geophysics, the laboratory for geophysical data, and the astronomical laboratory. The last section operates a small 20-cm aperture catadioptric telescope on the roof of the department, which can be used by students for astronomical viewing.

At the present time there are no graduate students at either MSc or PhD levels doing theses in astronomy at NUM. That situation could in principle change at any time, as the basic requirements of potential supervisors and a reasonably good infrastructure in terms of computers and internet access already exist. In the School of Physics and Electronics (which includes the Dept of Geophysics) there are however at present 20 PhD students and 25 MSc students. In the university as a whole, these numbers are respectively 224 and 404. Therefore the graduate student tradition is well established at this university.

I saw various publications produced by NUM astronomy staff. One was a textbook in Mongolian published in 2002 for teaching astronomy at undergraduate level. It is written by Prof C Lhagvajav and Prof N-U Tugjsuren, who is professor of physics at the Mongolian Technical University in U.B.

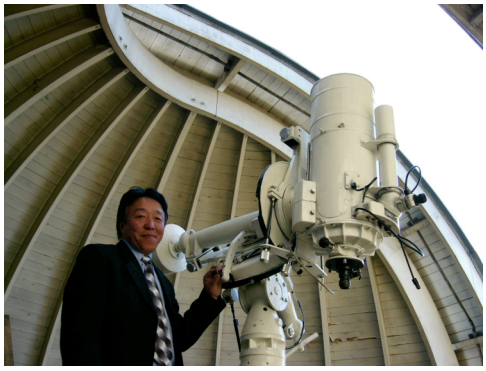
Prof Batsukh also gave me a reprint of a paper by himself and others on the number of hours usable for astronomical observation at several sites in Mongolia (G Batsukh et al., A&A Supp Ser 113, 341 (1995)). The paper analyses the number of clear night-time hours at nine potential astronomical sites distributed throughout Mongolia, as well as giving other relevant climatic data. Mongolia has several outstanding sites suitable for optical astronomy, with on average over 2000 clear night-time hours per year (this excludes hours within astronomical twilight), comparable with La Silla or Cerro Tololo in

Chile. One of the sites tested was Khurel Togoot near U.B., which is already the site of Mongolia's only astronomical observatory.

The Research Center of Astronomy and Geophysics and the Khurel Togoot Observatory

The Research Center of Astronomy and Geophysics (RCAG) is one of 15 research centres or institutes run by the Mongolian Academy of Sciences. It is independent of any of the universities. RCAG operates the Khurel Togoot Observatory on a small mountain about 20 km east of U.B. The altitude is 1620 m above sea level, and they enjoy a mean number of 1900 hours annually suitable for astronomical observations, which is high by international standards.

I visited Khurel Togoot during a mild snow storm (the only time of less than perfect weather during my week in Mongolia). Access over an unsealed road up the mountain was not easy, given about 30 cm of snow on the ground. I was shown round by Dr D Batmunkh, chief scientist and a solar physicist on the observatory staff.



Dr T Ulaanbaatar with a 20 cm Maksutov telescope
used for teaching astronomy at the National University.
The telescope is on the roof of the Department of Geophysics in Ulaanbaatar

The observatory was founded in 1957, the International Geophysical Year, when it was known as the Ulaanbaatar Observatory. The research areas of Khurel Togoot in astronomy are solar activity, and astrometry of asteroids in the solar system. They have a 20 cm solar coronagraph by East German Zeiss, installed in 1961. This is equipped with a large Hα filter but no CCD camera. Photographs of solar active regions are recorded, and a small solar spectrograph is used for line profile studies. Another instrument is a modern 40 cm Meade catadioptric computer-controlled telescope with a small CCD camera used for astrometry. The RCAG also has interests in geophysics, mainly seismology and terrestrial magnetism. The director of RCAG is Dr B Bekhtur.

My impression of Khurel Togoot is that it is an excellent site for astronomy, even though slightly better sites exist in Mongolia. A substantially larger astronomical telescope would be justified in such a good site, certainly in the 2 metre class. That would enable the start of a research program in stellar and nebular astronomy in Mongolia, which at the present time is lacking.

The RCAG has started publishing a research journal Geophysics and Astronomy (not to be confused with Astronomy and Geophysics published in the UK!). The first issue was in 2001 and contains 17 papers variously in Russian, Mongolian and English. It is published twice a year, and several of the scientists prominent in Mongolian geophysics and astronomy are on the editorial board.

RECOMMENDATIONS TO THE INTERNATIONAL ASTRONOMICAL UNION

There is a strong interest at NUM and in the Mongolian Academy of Sciences in developing astronomy in Mongolia with the assistance of the IAU. They are aware that astronomy is often not a high priority of a government in any developing country. However they also recognize that astronomy

at undergraduate level is an excellent subject for attracting students to studying physics and other natural sciences. This is the case already in Mongolia.

It is accordingly recommended as follows:

1. That the highest priority is for Mongolia to join the International Astronomical Union. An application through the Mongolian Academy of Sciences could be prepared in 2004-2005, with a view to this being presented to the IAU and ratified at the 2006 General Assembly in Prague.

2. The Teaching for Astronomy Development (TAD) program group of IAU Commission 46 should send an expert astronomer to Mongolia in 2005, to spend several weeks visiting NUM, to encourage that university to develop astronomy further and to enrol graduate students in astronomy.

3. Mongolia is very interested in the possibility of hosting an IAU International School for Young Astronomers (ISYA) in Ulaanbaatar at an early opportunity, possibly in 2006, or perhaps 2007. Students coming to an ISYA in U.B. would almost certainly come from neighbouring countries, such as China, Russia, Korea and Japan. A possible theme for an ISYA could be remote sensing and planetary exploration, as this links to the significant interests already being developed at NUM in satellite remote sensing.

4. Mongolia would benefit by sending one of its scientists to another country for research experience for several months under the IAU's Exchange of Astronomers (EA) program within Commission 46. It is proposed that consideration be given to at least one such overseas visit by a Mongolian astronomer in the years 2005-2007 under the auspices of the this program.

5. If the above developments take place, then Mongolia will become a country with a viable and even a strong future for astronomy, and it will then be an obvious place for a future IAU Asian-Pacific Regional Meeting. Mongolia should be considered for the tenth IAU APRM in Ulaanbaatar in 2008.

6. One of the biggest problems for Mongolian astronomy at the present time is the lack of a modern telescope of medium size (for example in the 2 metre class) which would take advantage of the exceptionally good climate for optical observational astronomy in the country. It would also be a key facility for the training of future graduate students. Since providing the capital for such an instrument may be beyond the means of Mongolia at the present time, the IAU should promote collaborations between Mongolia and nearby countries such as Japan or South Korea, which have significantly less good observing conditions but have substantially greater means of funding new projects.

ACKNOWLEDGEMENTS

I am grateful to the International Astronomical Union for support, which enabled me to visit Mongolia. I am also grateful to the members of the Department of Geophysics at NUM who hosted my visit, and made my time in Mongolia such a memorable experience.

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A VISIT TO THE UNIVERSITY OF NAIROBI

INTRODUCTION

This is a report of my visit to the University of Nairobi 15-17 June 2004 as a member of the IAU Commission 46 Programme Group for the World-Wide Development of Astronomy. The purpose of my visit was to assess the current situation with regard to teaching and research in astronomy and to make recommendations to the IAU on possible measures to promote and assist the development of an organized astronomy community in Kenya.

BACKGROUND ON KENYA AND NAIROBI

The Republic of Kenya, which attained independence in December 1963, occupies an area of 582 644 square kilometres astride the equator on the east coast of Africa. Climate in Kenya varies from tropical at the coast to arid in the interior, and is governed by altitude, with the highlands enjoying good rainfall. Kenya's population of 32 million comprises a number of ethnic groups: Kikuyu 22%, Luhya 14%, Luo 13%, Kalenjin 12%, Kamba 11%, Kisii 6%, Meru 6%, other African 15%, non-African (Asian, European, and Arab) 1%. English and Kiswahili are the official languages. Numerous other indigenous languages are also spoken. Most of the population is concentrated in the central and western parts of the country. GDP per capita for 2003 was about US$1000. The country has some 330 000 fixed-line telephones and about 1.4 million mobile phones in use. Internet penetration in Kenya has doubled in the past few years to 1.2%, or about 400,000 users, amounting to about 3.2% of internet users in Africa.

Nairobi is the political, commercial, administrative and cultural centre of Kenya. This fast-growing city with a population of over 3.5 million is situated 140 km south of the equator and covers an area of 700 square kilometres. The city's altitude of 1600 m above sea level makes for a mild climate year round.

THE UNIVERSITY OF NAIROBI

The University of Nairobi is the oldest and largest university in Kenya. The Main Campus of the University is situated near the City Centre, and houses the Central Administration, the Jomo Kenyatta Memorial Library, the College of Architecture and Engineering, and the College of Humanities and Social Sciences. Six other satellite campuses are situated throughout the city. The University offers approximately 200 programmes in the sciences, applied sciences, technology, humanities, social sciences and the arts. Student enrolment in the 2001/2 academic year was about 22 000, comprising some 17 200 undergraduate and 4 800 postgraduate students.

The Physics Department

The host Department for my visit was the Physics Department, situated on the Chiromo Campus. At the undergraduate level, the Department offers a 2-year Diploma in Computer Science, and four year BSc degrees in Physics, and in Microprocessor Technology and Instrumentation. At the postgraduate level, the Department offers Masters degrees in Theoretical Physics, Experimental Condensed Matter Physics, Geophysics, Electronics and Instrumentation, and Nuclear and Radiation Physics. The two year MSc degree comprises course work and a thesis. The Department also offers PhD degrees.

The Department's staff comprise 5 professors, 6 senior lecturers, 7 lecturers, and 10 tutorial fellows and graduate assistants, the latter all with MSc degrees. The Department's webpage may be accessed at http://www.uonbi.ac.ke/acad_depts/physics/

PROGRAMME OF THE VISIT

My host in the Department was Dr Paul Baki. On the morning of 15 June he introduced me to the Head of Department, Prof B O Aduda, and his colleagues. Prof Aduda expressed his clear support for the initiative of Dr Baki to introduce astronomy into the Physics Department and said he hoped the IAU and SAAO would assist his colleague with the introduction of an undergraduate astronomy course in the Department.

I then gave an informal presentation on the IAU, with emphasis on the activities of Commission 46 and its Programme Group for the World-Wide Development of Astronomy. This was adapted from the presentation very kindly provided by Prof John Hearnshaw, Chair of the Programme Group for the World-Wide Development of Astronomy in IAU Commission 46. In discussions following this presentation, Dr Baki expressed his interest in joining the IAU to keep abreast of developments and opportunities for the development of astronomy in Kenya. Dr Baki's colleagues from the other specialities in physics were all supportive of his initiatives, but I mention four in particular that could contribute to an undergraduate astronomy course. They are emeritus Prof J O Malo, who has given lectures in astrophysics, Prof J P Patel, a geophysicist interested in planetary science, Dr J B Awuor, a cosmologist, and Dr Collins Mito, a remote sensing specialist.

In the afternoon I was taken on a tour of the Chiromo campus. The campus comprises a number of two or three-storey buildings set in very pleasant tropical gardens. As part of the campus tour, I was shown the library. To my pleasant surprise, I found that the library has an astronomy section containing several hundred titles! This collection provides a foundation upon which to build an undergraduate course.

The Department has a number of laboratories with a fair amount of equipment. I was shown the experimental condensed matter laboratory, which has experimental apparatus to support work on thin films, crystal growth & characterisation, vacuum coating and semiconductor device modelling.

The Department has its own local area network, with connections around the building. Members of the Department do not all have computers on their desktops, but have good access to shared machines. Internet access in the Department was good. I was able to demonstrate the use of the ADS database and various other astronomy tools and websites with modest, but quite acceptable access speeds. The costs of internet usage are transparent to the users, something which is taken for granted in many countries, but is not always the case in African universities, where users can sometimes be charged for receiving and sending emails. The students appear to be fairly conversant with the use of computers and have good access to computers in the University computer labs.

There is also some local expertise in the use of Linux and instrumentation control software in *LabVIEW*. I have no doubt that there is sufficient in-house computing expertise to support astronomical software environments, like *iraf*.

The tour of the Department's laboratories and other facilities was very helpful in giving me a picture of the spread of research interests and technical capabilities in the Department. I then had a discussion with Dr Baki about the possibility of acquiring a small telescope to support the astronomy programme at the University. I informed Dr Baki of the Japanese ODA programme, through which a number of Planetaria and Goto 45 cm telescopes have been donated to developing countries by the government of Japan. Dr Baki said he was very keen to work towards the development of such a facility and recognised that a considerable amount of preparatory work and experience would be required before compiling a successful proposal. We also discussed the possibility of acquiring a smaller, mobile telescope as a short-term objective. A modern computer-controlled telescope in the range of 20-30 cm with some accessories would be an ideal instrument for public outreach and for developing students' observing skills.

I spent the rest of 16 June working with Dr Baki on the development of a curriculum for a four-year undergraduate astronomy course. This course will be offered as part of the undergraduate Physics degree. Dr Baki and I also discussed the practical component of the curriculum, but we did not have

the time to develop a detailed list of practical exercises. I undertook to review the vast literature available on practical exercises and to make some recommendations on returning home to South Africa.

To seek the support of the University hierarchy for these initiatives, Prof Aduda and I met with the Dean of Science, Prof N O Akech, on 16 June, and with the Principal of the College, Prof L W Irungu, on 17 June. Both expressed their strong support for the initiatives of Dr Baki and the Physics Department to introduce astronomy into the University's curriculum.

On the evening of the 16 June I met with Emeritus Prof Joseph B Otieno-Malo, President of the Kenya National Academy of Sciences (KNAS), which was founded in 1983 and is affiliated to the Third World Academy of Sciences. Prof Otieno-Malo expressed his support for the initiatives in the Physics Department. Should Kenyan astronomy reach the point where Kenya joins the IAU, the KNAS would be the natural adhering body.

CONCLUSIONS & RECOMMENDATIONS

There is a strong interest in the Physics Department at the University of Nairobi in developing astronomy with the assistance of colleagues in South Africa and the IAU. The Department has commenced an initiative to introduce astronomy as part of its undergraduate curriculum. The person who is spearheading this initiative is Dr Paul Baki, a cosmologist by training. There is no doubt that Dr Baki enjoys the full support of the academic hierarchy for the introduction of an astronomy programme at the University of Nairobi's Chiromo campus. This was evident to me in all my meetings with Dr Baki's colleagues and other officials in the College.

Clearly, astronomy in Kenya is in a nascent phase, and must be carefully nurtured if it is to flourish in the coming years. At this stage, small but significant steps may be taken to support this objective.

I recommend that:

1. The IAU should recognise and nurture the current initiatives to develop astronomy in Kenya. These are initiatives by Kenyan scientists who seek guidance and advice from their international colleagues. A step in this direction would be to admit Dr Paul Baki as a member of the International Astronomical Union in his personal capacity at the next IAU General Assembly in Prague in 2006.
2. A small, modern telescope at the University would provide an extremely powerful platform for public outreach and undergraduate training in astronomy, and could be the hub around which an undergraduate practical observing programme is built. Consideration should be given to possible forms of assistance or facilitation which Commission 46 might be able to provide to enable the acquisition of a 20-30 cm computerised telescope with accessories.
3. IAU Commission 46 should consider supporting Dr Baki or one of his colleagues to travel to another country for a research experience of several months, relevant to the conditions, interests and level of development on the ground at the University of Nairobi. In order to maintain the momentum developed during my visit, it is proposed that consideration be given to facilitating such a visit during the 2004-5 academic year.
4. Having acquired knowledge of all aspects of a working observatory, Dr Baki and his colleagues should then be in a position to craft a proposal for a 0.5 m class telescope facility for undergraduate training and appropriate research. Commission 46 should avail itself to assist Dr Baki in the development of such a proposal.

The flowering of Kenyan astronomy will take 5 to 10 years, when the present generation of students, inspired by the new curriculum at the University, decides to study astronomy at postgraduate level. Initially, such studies will take place in other countries, and it will be important to develop opportunities *in Kenya* for these young scientists to return to after graduation. The increasing penetration of the internet in Africa has greatly mitigated isolation of scientists over the past 10 years. The challenge for the future is to take advantage of the opportunities being created by the presence of

new large-scale facilities on the continent, such as the Southern African Large Telescope or the High Energy Stereoscopic Facility in Namibia, to create an indigenous community of African astronomers.

ACKNOWLEDGEMENTS

I acknowledge the gracious hospitality of my hosts at the University of Nairobi. I am also grateful to the International Astronomical Union for financial support which enabled me to visit Kenya, and to Prof John Hearnshaw, Chair of the Programme Group for the World-Wide Development of Astronomy, for inviting me to undertake this memorable visit and for kindly allowing me to use his presentation on the IAU and Commission 46.

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DEVELOPMENTS AT NEW ZEALAND'S NATIONAL OBSERVATORY

The Carter Observatory is New Zealand's National Observatory and is charged by Act of Parliament to advance astronomy in New Zealand. Today, this means the Observatory is mainly involved in science and technology promotion and the teaching of school students. The approach taken to this work is to link astronomy to many different disciplines and interests. In teaching astronomy we draw upon the history of the subject and the history of New Zealand. We have a particular interest in Maori astronomy and the navigation techniques of Pacific peoples.

In 2004 Carter Observatory became a registered education provider. This means it is given credentials by the Government and subjected to a range of quality assurance audits. The Observatory is accredited to teach both astronomy and mathematics.

The Observatory worked in partnership with the New Zealand Qualifications Authority to establish unit standards in astronomy. This means the subject is now formally an available part of the New Zealand education system, and thus can be assessed for credits by any secondary school and other registered providers. There are three unit standards in place and more are being developed. There are plans to develop a National Diploma in Astronomy, which will be an extra qualification available to both senior secondary school students and those in post-secondary education. The management of awards and qualifications is now one of the major roles of the Carter as the National Observatory.

With the unit standards in place, the Carter Observatorywas able to develop two courses and teach them online to students throughout New Zealand. The courses available are Our Solar System and Our Milky Way and Other Galaxies. A third course, Space, is in an advanced stage of development. Each of the courses involves interaction with our online tutors, and the assessment and course teaching materials are integrated.

The course development process takes time. The first step is to write the 'technical version' of the course, which must address the performance indicators in the unit standard and fill in the gaps. The second step is to produce the 'educational version' which is in language appropriate for 14 year-olds. Then the assessment materials are added, along with the graphics and the dynamic modules. Then the whole thing is peer reviewed from two different perspectives: science, and education.

The cost per course is NZ$195 + GST (at the present date ~US$150 or ~£80). New Zealand schools can access the Ministry of Education funds for students who wish to do these courses.

Thanks to a partnership between the New Zealand Community Trust and Carter Observatory, 200 students will be offered scholarships to allow them to participate in Carter Observatory's astronomy

courses. Every school in the country will be able to participate in the scheme. It is also hoped to attract overseas students who want to learn more about astronomy.

By October there were over 300 students from more than 60 different schools studying the courses. Over 40 students have completed one or more courses and gained credits towards their national awards.

For more information about the courses, visit www.carterobservatory.net

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ASTRONOMICAL EDUCATION AT THE UNIVERSITY OF AUKLAND

The University of Auckland continues undergraduate teaching of astronomy with two popular courses, an introductory astronomy paper Planets, Stars, and Galaxies, and a more advanced Astrophysics paper, which covers topics in planetary science, stellar astrophysics, cosmology, and includes a practical component.

The teaching observatory on the Physics Department roof is available to all astronomy students for viewing and imaging, and comprises three 0.3 m telescopes, equipped with CCDs and a spectrograph. Astrophysics students perform two photometry labs during their coursework, constructing H-R diagrams for galactic clusters, and determining the rotation periods of a magnetic white dwarf.

Public outreach activities at the University of Auckland involve hosting public addresses by visiting astronomers, and demonstrations given during the annual Incredible Science festivals. The University of Auckland hosted the Transit of Venus website, an initiative to provide information on astronomy, the history of observations of past Venus transits, and the current status of New Zealand astronomy to students, teachers, and the public, as part of celebrations marking the 2004 transit of Venus.

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THE SOUTH AFRICAN NATIONAL ASTROPHYSICS AND SPACE SCIENCE PROGRAMME

BACKGROUND

South Africa has a long history of excellence in astronomy, and its geographical position, modern infrastructure and good climate ensure that southern Africa is well placed to continue to play a significant role in astronomy in the 21st century. New large-scale facilities are being built in the region to take full advantage of this situation. These facilities include the 11 m Southern African Large Telescope (SALT) in the Northern Cape province of South Africa and the High Energy Stereoscopic System (HESS) near Windhoek in Namibia. To ensure that these facilities are properly utilised, South African astronomers have banded together to establish a new training programme called the National Astrophysics and Space Science Programme, or NASSP.

In addition to providing training for the next generation of African astronomers, NASSP is being used as an instrument to transform the South African astronomical community to make it more demographically representative of South African society as a whole. This means than the programme seeks especially to attract applications from suitably qualified black and female students who might otherwise never consider scientific careers. To allow interested, but impoverished, students to overcome the financial pressures to train for lucrative careers and enter the job market as early as possible, NASSP endeavours to provide comprehensive scholarships to cover the cost of tuition and living expenses for all students admitted into the programme. NASSP also accepts talented students from other African countries. In the longer term, it will be important to increase the numbers of career opportunities for young scientists in the region. The creation of opportunities in other African countries is especially important to combat the brain drain problem in Africa. NASSP therefore encourages students to return to their communities after completing their training. Parallel initiatives are under way to establish an African astronomy and education research network that will support NASSP alumni and allow them to continue to be productive in their own national environments.

THE PROGRAMME

The National Astrophysics and Space Science Programme is a combined Honours and Masters degree programme run by a consortium of six South African universities and three national observatories. The consortium has collected all the expertise available in the community to offer a programme hosted at the University of Cape Town. Students are based in Cape Town for the duration of the lecture component of their courses, but travel to the partner institutions on field visits and for the research component of their Masters degree. The partner institutions in turn contribute visiting lecturers to offer courses at the host university and also to provide project supervision.

Few South African universities offer formal courses in astrophysics at undergraduate level. Therefore, to prepare students for postgraduate work in astrophysics, the first year of the NASSP is entirely course-work based. Students who have successfully completed three years of an undergraduate degree in physics and mathematics or engineering may enrol for an Honours year (the equivalent of the final year of a four-year undergraduate degree) in which they receive intensive courses in astrophysics and space science. They also do a small research project in an area of their choice. Students who complete this component of the programme are awarded a BSc Honours in Astrophysics and Space Science. The second year of the NASSP comprises six months of post-graduate level course work in astrophysics and space science, followed by a mini dissertation. Students who pass their examinations and complete a satisfactory dissertation are awarded a Masters in Astrophysics and Space Science

Generous support received from the Ford Foundation, the South African National Research Foundation and its national facilities and the University of Cape Town. enabled NASSP to receive its first intake of 13 Honours students and 5 Masters students in 2003. The current enrolment comprises 14 Honours and 14 Masters students from South Africa and a number of other African countries.

More information about NASSP is available at www.star.ac.za

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EDUCATIONAL EFFICIENCY OF OBSERVING ASTRONOMICAL PHENOMENA: THE CASE OF PLANET VENUS

This is an abstract of a paper the full text of which can be found at
http://ceres.obspm.fr/~mbirlan/effic.pdf

Many times astronomy is the victim of its own success in front of the public or pupils and students. Exiciting astronomical phenomena are either left aside or remain simple *ephemeral entertainments*, lost in the long sequence of events created with or even by the mass media. Certainly, the astronomers must prepare more carefully the educational use of astronomical phenomena for ensuring the maximum efficiency of them. The use of the conceptual maps seems to be an efficient tool to this effect, unfortunately less known by the astronomers (http://ceres.obspm.fr/~mbirlan/effic.pdf).

The two rare astronomical phenomena involving the planet Venus in 2004 have, obviously, educational values which made them worthy of being the subject of the conjugated efforts of the astronomers and of the schools. Nevertheless, if one takes into consideration mainly the educational interest, the analysis made by us using the conceptual maps underlines a much larger educational weight of *the occultation of Venus by the Moon* compared to *the transit of Venus*.

Unfortunately, the campaign of Venus Year was focused only on the transit of Venus. We can say that "the transit occulted the occultation".

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NEWS OF MEETINGS AND OF PEOPLE

JULIETTA FIERRO JOINS THE MEXICAN ACADEMY OF LANGUAGE

(Científica Julieta Fierro ingresa en Academia Mexicana de Lengua)

Former IAU C46 President Julieta Fierro, the National Liaison from Mexico, was made a member of the Academia Mexicana de Lengua. Her inaugural speech was Imaginemos un Caracol. The notice from the Office of the President of Mexico is available at
http://www.presidencia.gob.mx/buenasnoticias/index.php?contenido=9043
says that she was made a member for her scientific investigations and educational activities. Prof Fierro has long been at the Universidad Nacional Autónoma de México. We congratulate her.

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

RAS NATIONAL ASTRONOMY MEETING (UK), MARCH 2004 – REMOTE OBSERVING

The UK Royal Astronomical Society's annual National Astronomy Meeting in 2004 was held at The Open University in Milton Keynes. It was there at my invitation, and I chaired the organizing committee for two years and then co-chaired it with Dr Andy Norton for the final six months. The OC was also responsible for the academic programme, which launched each of the four days with a plenary session, followed by four parallel sessions.

A few years ago I organized and chaired the first education session at an RAS-NAM at the University of St Andrews, Scotland. This year Dr Paul Roche of the University of Cardiff, Wales, organized and chaired the education session, which occupied a 95 minute parallel session – not a lot of time, but RAS-NAMs have a research focus. In this session there was an emphasis on remote observing in education.

The first talk, by Dr Lucie Green, of the Faulkes Telescope Project, described this major new resource, consisting of two robotic 2 metre telescopes equipped with 2048x2048 pixel CCD cameras and broad and narrow band filter sets. One is sited in Haleakala in Hawaii and the other in Siding Spring in Australia. Most of the time is allocated to school students in the UK to provide them with inspirational maths and science projects.

The Bradford Robotic Telescope was described by its instigator, Dr John Baruch of the University of Bradford UK. This modest telescope commenced operations in December 1993, and has since been used largely by school students. A second telescope is being built for Tenerife (Canary Islands), where the weather is much better than in northern England!

The next talk was by Eamonn Ansbro, of Kingsland Observatory in Ireland. He spoke about the Virtual Telescopes in Education (VTIE) being developed in Ireland along with the National University of Ireland at Maynooth. VTIE allows school students to control astronomical telescopes from their classrooms via the Internet.

Keith Norfolk of the University of Leicester described Classroom Space, a University of Leicester project to enliven the teaching of National Curriculum Science in the UK. It is funded by the UK Particle Physics and Astronomy Research Council (PPARC). It latches on to any relevant sources that might be available.

The final talk was given by Dr Douglas Pierce-Price, of the Joint Astronomy Centre, Hawaii (JACH). He described outreach activities based on the UK's James Clerk Maxwell Telescope (JCMT) and the UK Infrared Telescope (UKIRT), both on Mauna Kea.

This was judged to be an interesting, well presented session, and, in competition with three non-educational sessions, attracted an audience of nearly 50.

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

THE 27TH IAU-UNESCO INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS

The 27th International School for Young Astronomers took place at Al Akhawayn University in Ifrane (AUI), Morocco, under the auspices of Rachid Benmokhtar Benabdellah, President of Al Akhawayn University.

This new ISYA was organized after a first Teaching for Astronomy Development (TAD) program had been running since 1999 at the University Hassan II in Casablanca, Morocco. During the opening ceremony of the School, a second TAD agreement was signed by the International Astronomical Union (IAU) represented by its general secretary Prof Oddbjorn Engvold and Rachid Benmokhtar Benabdellah. Prof James C White (TAD chairperson) also attended the ceremony. This new agreement has the objective to support the continued, long-term development of astronomy and astrophysics in Morocco.

The members of the School Programme Committee were:
Dr Michele Gerbaldi (Institut d'Astrophysique, Paris, France)
Dr Hassane Darhmaoui (Al Akhawayn University)
Dr Khalil Chamcham (Casablanca University, Oxford University, UK)
Dr Amine Bensaid (Al Akhawayn University, School of Science & Engineering) was the Chairperson of the Local Organizing Committee.

The number of participants was 29 (female 9, male 20), of whom 11 were Moroccan, and 18 were foreigners from Algeria, Bulgaria, Iran, Jordan, Lebanon, Macedonia, Malaysia, Nigeria, Palestine,

South Africa, Sudan, and Turkey. The background of the participants ranged from finishing their BSc degree to having started their PhD about one year ago.

The faculty members were:

Dr Bruce Partridge (Haverford College, US) Radio Astronomy and Cosmology
Dr Bruno Guiderdoni (Institut d'Astrophysique de Paris, France) Galaxy Formation
Dr Edward Guinan (Villanova University, USA) Magnetic Activity of the Sun and Solar Type Stars, and Variable and Eclipsing Stars as Astrophysical Laboratories
Dr Ignasi Ribas (Barcelona university, Spain) Astronomical Techniques, Data Analysis
Dr Jean-Pierre de Greve (Brussels University, Belgium) Evolution of Close Binary Stars
Dr Joseph Silk (Oxford University, UK) Galaxy Formation
Dr Kavilan Moodley (University of KwaZulu-Natal, South Africa) Cosmological Models
Dr Mariano Mendez (SRON - National Institute for Space Research, The Netherlands) High-Energy Astrophysics
Dr Martin Hendry (University of Glasgow, UK) Statistical Astronomy
Dr Michele Gerbaldi (Institut d'Astrophysique de Paris and Universite de Paris-Sud Orsay, France) Stellar Atmospheres
Dr Mohammed Badaoui (APESA – Agronomic and Veterinary Institute Hassan II, Rabat, Morocco) Infrared High Resolution Molecular Spectroscopy
Dr Pedro G. Ferreira(Oxford University, UK) Cosmology with the Cosmic Microwave Background

Sessions were organized for talks by the participants on their current interest and research. More than 15 talks were given.

Thanks to a fruitful collaboration with the AUI Information Technology Services department a network of 20 computers under LINUX was set up for the practical activities. Specialized software packages were installed for the reduction and analysis of data, IRAF and XSPEC among others. More than 25 hours were spent in data reduction and analysis

The Al Jabr School, in Casablanca, is acknowledged for the loan to AUI, of the 20 cm telescope of Al Jabr School, allowing observational sessions to be set up.

This ISYA could be organized thanks to the financial support of the Al Akhawayn University. ICTP (The Abdu Salam International Centre for Theoretical Physics, Italy) and CNRST (Centre National pour la Recherche Scientifique et Technique, Morocco) are acknowledged for the grants given for the this event.

This ISYA also opened its doors to interested AUI students and faculty members, who attended some of its activities.

ISYA 2004 URL: http://mail.alakhawayn.ma/~H.Darhmaoui/ISYA/index.htm

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THE 28TH IAU-UNESCO INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS

The 28th IAU-UNESCO International School for Young Astronomers will be held at Instituto Nacional de Astrofisica, Optica y Electronica (INAOE) in Tonantzintla, Puebla, Mexico, 25 July – 12 August 2005.

The language of the School will be English.

Among the topics to be covered are :

Theory of Galactic Star Formation
Stellar Atmospheres, Binaries, Extrasolar Planets
Interstellar Medium
Supernovae: from Stellar Evolution to Cosmology
The Chemical History of the Universe
Groups and Clusters of Galaxies, Large-Scale Structures
Observational Techniques at Various Wavelengths
Astronomical Databases and Virtual Observatories

More information and an application form can be obtained through the URL:
http://www.inaoep.mx/~isya28/

Applications should include your achieved level of studies in physics and astronomy and any topic of special interest. Two letters of recommendation are required. Grants will be available.

The deadline to receive applications is 31 January 2005

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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.

- Overview (of C46, in English, French, and Spanish)
- Offices and Organising Committee
- Program Groups
- National Liaisons (directory)

- Online Newsletters
- Presidents and Current Vice-President
- Resolution on the Value of Astronomy Education (passed by the IAU General Assembly 2003)
- IAU Working Group on Communicating Astronomy
- External links
- Announcements/News
- Minutes from the last IAU General Assembly
- Commission 46 Terms of Reference, Rules & Guidelines

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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 Organizing Committee, and for the other members of the Program Groups, see the website http://astronomyeducation.org (and http://physics.open.ac.uk/IAU46)

National Liaisons **Barrie W Jones (PG Chairperson)**
These are listed on the website http://astronomyeducation.org
(and http://physics.open.ac.uk/IAU46)