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EDITORIAL

This issue is ready just after another successful JENAM, the one which was held at the beautiful city of Porto in Portugal last September. I would like to congratulate our Portuguese colleagues for their effort and hospitality. A special feature of this 2002 JENAM was the participation of a large number of young people more than ever before.

I believe this is a significant achievement due to the well focused workshops attracting young researchers and I wish to be improved in the coming years.

The usual news from networks and organizations show the high degree of astronomical activity in Europe (particularly important one in the international arena). Coordinated effort and cooperation seem to be the key elements of the European priorities. As the president of EAS points out in his message, more tight collaboration and active interaction of EAS with the European astronomical establishments would be very effective for the next decade's planning.

The report from some of the JENAM 2002 workshops and two more meetings are also presented. I believe that Jean Schneider is right that astronomers should not miss the chance to be involved more actively to astro-biology.

I also congratulate our colleagues in the south-east branch of EAS, who are taking so many initiatives to find ways to recover from their problems in astronomy. I propose that all of us should also try to help them in any possible way. European astronomy can be very flourishing, if all its members are prosperous.

The sceptics' corner hosts Mike Disney's opinion on the OWLT. It is a challenging point of view and definitely deserves one or more answers. We expect reactions.

I also like to draw your attention to the coming XXVth IAU General Assembly at Sidney, in July 13-26, 2003. Our Australian colleagues have well prepared this special event of Astronomy. A number of very interesting symposia are announced, all appealing to most of us.

Finally we like to invite you to the next JENAM 2003 in Budapest in 25-30 August (see the attached 1st announcement and the relevant WEB page). The program is carefully prepared not to overlap with IAU, so both meetings are going to be interesting and worth participating. All the best to our Hungarian colleagues who take the burden of preparing the next JENAM.

Mary Kontizas

MESSAGE OF THE PRESIDENT

As usual in the autumn, we report in this Newsletter on the recent JENAM, which this year was organized together with the Portuguese Astronomical Society. EAS members who attended the meeting in Porto will agree it was a scientifically exciting and socially enjoyable week in one of Europe's historically important cities. We thank our Portuguese colleagues for their hospitality and the excellent local organization of the programme.

In this message, I would like to consider a development that could prove to be important to many of our members.

As we by now are all aware, the EU's coming Sixth Framework Programme is almost upon us. One of its goals will be to move toward opening up national research and training programmes. While the details as to the extent of such an opening and just how it might occur in practice are not yet clear, the theme recurs in several of the EU's working documents and in recent discussions with national research agencies. The ERA-Net scheme, for example, includes explicitly among its aims "the mutual opening of national and regional research programmes". And the inter-governmental CREST forum earlier this year committed itself to starting discussion on the matter in several specific areas, including astrophysics.

A moment's consideration leads to the thought that the EAS might facilitate the effort for astronomy. If handled correctly this could benefit directly our members. We could in particular play a role to ensure that astronomers and their students across the continent become aware of all opportunities for research and training open to them, in all our countries. Three specific activities seem to be relevant in this regard.

As regular readers will recall, the EAS is currently gathering national planning documents, trying to summarize them and then to make this information widely available. Documents from Denmark, Estonia, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Poland, Spain, Sweden and the UK are now available. As reported last Newsletter, the main scientific priorities are generally shared across countries, while the priorities for investment in facilities differ rather widely, depending on specific interests and capabilities. The overview under preparation will, of course, be a living document, and our intention is to circulate our initial draft before the end of the year to EAS associate societies for comment, then to all our members, and finally to make it publicly available on our web site. As an aside, let me thank those colleagues who have helped us to date by providing their relevant planning documents, and ask readers to let us know if we might obtain similar information from remaining countries, so that it can be included in a future draft. We are also planning to hold a plenary session in Budapest in which aspects of these national plans can be presented.

Unfortunately, information on national research and training programs potentially open to (especially young) researchers in

other countries is generally not readily available and has not been included in our initial overview of priorities. So there remains much work to do. In Porto, the Council discussed briefly the possibilities offered by the EU's ERA-Net scheme. We concluded that we might join with our affiliated national societies in a proposal for ERA-Net financing. The idea would be to obtain funding, first simply to prepare an up-to-date list of all European astronomers, their institutes and addresses, and then to generate an inventory of national research and training programs together with the names of contact persons and indications of whether and how non-nationals might apply for (graduate)studentships. We currently expect that I will contact our affiliated societies early in 2003 to assess interest in such a proposal and the most important aims it might have.

We also decided that the time is ripe to institute a new feature at the JENAMs – a 'job market' for young astronomers. The idea is both to ask national and international organizations that regularly advertise research and training positions (e.g. studentships, postdoctoral fellowships etc) to present their programs at the JENAM, and to give young, position-seeking researchers across the continent the opportunity to talk to potential employers about the details of the positions as well as what they might do to apply for them. It is clear that we do not yet know the best way to organize such an event, but we agreed to make an initial effort next year in Budapest. Council member Peter Shaver (pshaver@eso.org) has agreed to be contact person and to organize our first job market event at that time, so any readers who have jobs, ideas about the organization, or even would wish to help Peter, should contact him. It will, of course, also be important that members who know of young astronomers looking for positions encourage them to attend the JENAM next year in Budapest.

Finally, the CREST discussion could provide a channel of communication with national governments. I have agreed that we will contact national 'programme managers' in astronomy and astrophysics across Europe, assemble information on national research and training programs and assess the opportunities for opening these programmes to researchers from other countries. As we proceed, the CREST forum will provide an opportunity to inform funding agencies of relevant activities in other countries, as well as raise awareness of each of our countries' scientific and investment priorities. An important, as yet incomplete task will be actually to identify the appropriate programme manager in each country. In a many cases I will have to call on members to help me in this.

It will be clear that the EAS does not wish to duplicate discussions in our international organizations – ESO, ENO, ESA, and EVN/JIVE, or in our infrastructure cooperation networks, RadioNET and OPTICON. These organizations will continue to promote their own programmes, while we will attempt to inform widely and to facilitate discussion of a more general nature.

Harvey Butcher

SCEPTIC'S CORNER

OVERWHELMINGLY LARGE BILLS

Two zoologists set out to discover new butterflies. One builds the world's largest butterfly net and erects it down the road. The other packs his small net and departs for exotic regions. Who is more likely to succeed?

We all know the answer to that, and yet many astronomers persist in believing that a much bigger net for photons, such as OWL, is actually a good idea. Their naivety lies in mistaking data for information when Information Theory tells us that the information gathering rate goes up only with the LOGARITHM of the data rate. Applied to Butterflies its called Fishers Law and it works beautifully in practice.

For ground based optical-telescopes the situation is disguised by the fact that larger telescopes tend to be younger, to be at much better sites and to be far more lavishly instrumented. Even so, small to moderate sized telescopes come out well in any comparisons (see studies by Helmut Abt). From extra-galactic redshifts (Slipher, using a 0.6-m diameter telescope) through QSO Absorption Line Systems and gravitational lenses (discovered with 2-m class telescopes) to extra-solar planets (found using a 1.9-m instrument) they have usually led the way. Indeed according to Harwit the largest telescope has scarcely ever been responsible for the major discoveries of its day.

And so you would expect, both on theoretical and historical grounds. Theoretically the logarithm should be a serious discouragement, while historically astronomy appears to be an immature subject i.e. one in which less than twenty percent of its major discoveries can so far have been made (Harwit, Disney).

In the circumstances it would be foolhardy to pour too many of our limited resources into OWL. According to my calculations, when you increase mirror diameter by a factor of 10 the Discovery Potential goes up by a factor only of 3.5x, an extremely modest factor compared to say improving the site [20x] or providing innovative instruments (e.g. x70 when going from plates to CCD's per unit area of sky).

It will be objected of course that the great discoveries lie just over the present horizon. Easy to say but difficult to believe. Where is the historical evidence to even suggest that it is the faint objects which lead to the big discoveries? To the contrary.

We will be told that galaxy formation occurred at redshift 2 or whatever. Maybe. But reflect on this. We live right next to a very luminous star, so it is foolish to study faint objects at solar wavelengths – if we don't have to. And usually we don't. You have only to go out to the H-band (at 1.6 μm) in space for the sky brightness to fall by factor of at least a thousand! If you study broad band low surface brightness objects such as galaxies it is much wiser to do so at any but solar wavelengths i.e. not from the ground, because the contrast will generally be more favourable.

If we are not careful the unimaginative will set up a giant job creation program for themselves at the expense of astronomy as a whole. Politicians have a limited appetite for funding clunky pieces of glass. Don't forget how American Particle Physics dug its own grave in Texas. If ESO had truly believed in the efficiency of an OWL they would have built one set of identical instruments for the VLT and slaved the 4 telescopes together. To promote OWL now is at the very least inconsistent.

Finally, turning a science into a big business is the most certain way of bringing it to an end. What young Galileo would choose to work within the colossal bureaucracy which is bound to surround OWL?

Mike Disney, Cardiff University/UK

NEWS FROM EUROPEAN ORGANIZATIONS & NETWORKS

ESA

The Science Programme of the European Space Agency has had to undergo some quite radical changes in both its structure and way of working to accommodate the outcome of the Ministerial Meeting held in Edinburgh in 2001. The challenge has been to try to maintain a comprehensive space science programme within ESA, including the flexibility to incorporate new missions on a short timescale, despite the pressure of reduced overall budgets. The long term planning of the programme proved to be robust and adaptable to new challenges and uncertainties but the old Horizons 2000 Programme had to be fully revised in May of this year, our new Programme, Cosmic Vision, was approved by the Science Programme Committee.

Despite this upheaval, science is still flourishing in ESA! The new gamma-ray observatory, **Integral**, was successfully launched on 17 October on a Proton rocket from Baikonur and is now in a perfect orbit (perigee height 9000 km) to conduct gamma-ray observations as it remains for most of the time above the harmful effects of trapped proton belts. **Integral** carries two main instruments: a Franco-German led spectrometer (SPI) and an Italian-led imager (IBIS). These are supplemented by a Danish-led X-ray Imager (JEM-X) and a Spanish-led optical CCD imager (OMC). First data from **Integral** are proving to be very promising.

XMM-Newton continues to provide a new view of our Universe in X-ray energies thanks to its large photon collection capability and throughput. Operations continue to run smoothly. It has been decided to lower the earth avoidance constraint angle from 48 to 42 degrees. This not only alleviates some of the pressure on the observation scheduling but also allows for a more efficient overall observation strategy. An extensive re-calibration and contamination-monitoring programme will be put in place. The instruments are being further cooled to ameliorate most of the radiation-induced damage to the instruments that has been incurred so far.

Astronomy missions under development include **Planck** investigating the fine spatial variation of the cosmic back-

ground radiation, *Herschel*, a powerful far-infrared and sub-millimetre observatory and *GAIA*, the successor to *Hipparcos*, which will produce an unprecedented high-quality three-dimensional study of the stellar content of our galaxy. Work has now also started on *Eddington*, which will measure stellar oscillations and search for Earth-like extra-solar planets. The payload concept has evolved toward a 4 (TBC) co-aligned 60 cm Schmidt telescopes, each equipped with a mosaic of 6 CCDs. The large 5x5 deg² telescope field-of-view ensures that *Eddington* will monitor a large number of stars simultaneously. The mission's nominal lifetime is 5 years. Two years are reserved for asteroseismology, during which *Eddington* will perform about twenty pointed observations of ~30-90 days duration each, thereby accumulating high precision (1.5 ppm in Fourier space) photometric light curves of more than 150,000 stars brighter than magnitude 11. The planet finding programme will consist of one single three years long uninterrupted observation during which the satellite will accumulate high accuracy time series of over 100,000 stars brighter than $m_v = 17$. The duration is dictated by the need to confirm the planet detection and infer its orbital period from three consecutive transits in the light-curve. Finally, studies are being carried out on options for ESA's contribution to the James Webb Space Telescope.

As well as Astronomy Missions, ESA's planetary and solar missions are also going well: *Ulysses*, *SOHO* and *Cluster* are continuing to operate nominally and are providing valuable information on the heliosphere outside the plane of the ecliptic (*Ulysses*), on the Sun's interior and outer atmosphere (*SOHO*) and on understanding the processes taking place in the interface between the solar wind plasma and the Earth's magnetic field (*Cluster*). *Cassini/Huygens* is on its way to *Saturn* and *Titan* and is already close enough to these objects to take an early image of both of them together.

Within the next six months, ESA will launch *Rosetta* (to rendez-vous with comet Wirtanen in 2011, *Mars Express* (Europe's first mission to Mars) and *SMART-1*, the first Small Mission for Advanced Research in Technology whose primary objective is to flight test Solar Electric Primary Propulsion and which will also orbit the moon for a six month period.

Finally, on the Fundamental Physics side, preparations continue on *LISA* (the Laser Interferometer Space Antenna) which comprises three identical spacecraft, located 5 million kilometres apart, forming an equilateral triangle. *LISA* forms a Michelson interferometer with a third arm to give independent information on the two polarizations of gravitational waves and for redundancy. The centre of the triangular formation is in the plane of the ecliptic, 1 AU from the Sun and trailing the Earth by approximately 20°.

The *LISA* Technology Package (LTP) is also under development with a view to being flown on the second *SMART* mission in order to demonstrate key technologies needed for this very innovative mission.

For further information on these missions as well as those not specifically mentioned above, please consult <http://sci.esa.int>

Alvaro Gimenez, Head,
Research and Scientific Support Department, ESA/ESTEC

ESO

There were two major highlights amongst the recent events at ESO. The United Kingdom officially joined ESO on 1 July 2002, bringing the total number of ESO member states to ten. And construction of the Atacama Large Millimeter Array (ALMA) was officially approved by the ESO Council at its meeting in London on 9 July. The U.S. National Science Board also gave its final approval in August, and the Bilateral Agreement for this joint Europe-North America project will soon be signed. The organization of the construction and operations phase of ALMA is rapidly proceeding, with the establishment of the ALMA Board, the Joint ALMA Office, and the many scientific and technical teams. The first prototype antenna is in the final stages of assembly at the VLA site in New Mexico to undergo extensive tests, and the development of the second is proceeding at full speed. The negotiations with Chile for the use of the Chajnantor site are well advanced.

At Paranal, all VLT Unit Telescopes (UTs) have now been verified for VLTI. Preliminary tests were successfully carried out in which the light beams from all four UTs were successively combined, two by two, to produce interferometric fringes. The VLTI commissioning data of the past year have been released, and science observations are now beginning. The first two VLTI 1.8-metre auxiliary telescopes are reaching completion, and will be installed at Paranal next year. The contract for a fourth was signed in September. VLT operations continue smoothly, with all four UTs providing stable science observations with very high efficiency. In addition to the existing instruments (FORs1 and 2, ISAAC, and UVES), NACO is now available to the communities. FLAMES is offered for the next period, and so is now VIMOS, through a Delta call after successful commissioning. The enclosure of the VLT Survey Telescope (VST) is presently under construction at Paranal, and a site preparation contract for the infrared survey telescope VISTA is being finalized. With all these activities, including both regular science observations and commissioning of so many new instruments, Paranal is an extremely active observatory.

At La Silla an organizational re-structuring has been completed. The NTT, 3.6m and 2.2m teams were merged into a Science Operations Department in July, and operations of all three will be conducted from a single new control building. The HARPS project is nearing completion and commissioning. Two new robotic telescopes (Italian and French) to follow up Gamma-Ray alerts from satellites are being built, and will be installed on La Silla within the next year. A new organizational structure has also been implemented for SEST/APEX, in anticipation of the installation of APEX on Chajnantor next year.

Many instrumentation projects for the VLT, VLTI and La Silla are in the pipeline, in various stages of progress leading to integration, shipment to Chile, and commissioning. Feasibility studies for 2nd generation instruments have been launched, and a forum on «1st generation VLT/VLTI instruments: lessons learned» will be held in April 2003. Development of the Laser Guide Star Facility is well underway, with first light foreseen in September 2003.

Conceptual studies and design iterations continue for the next generation optical/IR telescope OWL, including structural studies, various industrial studies, and work on multi-conjugate adaptive optics concepts. ESO and the ECF are also major participants in collaborations working towards an International Virtual Observatory; a large meeting was held on this topic at Garching in June, and an International Virtual Observatory Alliance has been formed.

ESO celebrated its 40th anniversary in October 2002 – a significant event for the organization that was marked with a book, a CD-ROM, a planetarium show and a video, as well as a special issue of *The Messenger*. In addition to such events, ESO plays a very active role in education and public outreach, with such initiatives as the very successful «Physics on Stage» series (with fellow EIRO forum members) and other programmes for students, teachers and the public. Details of all these activities are available on ESO's website <http://www.eso.org>

Finally, a very special event takes place in Stockholm in December – the awarding of the Nobel Prize for Physics to Riccardo Giacconi, ESO's Director General over the years 1993-1999 - and we join all our colleagues over the world in sending him our congratulations on this great honour.

Peter Shaver (ESO)

OPTICON

The FP6 Launch conference, Brussels, November 11-13.

OPTICON was represented at the big European Research 2002 conference in Brussels held between November 11th and 13th. The OPTICON stand, staffed by John Davies and Karen Disney, formed part of the infrastructures area of the exhibition. OPTICON was selected for inclusion as an example of a successful FP5 co-ordination activity and because, in some sense, it represented a prototype of a new FP6 instrument called an Integrated Infrastructure Initiative. As well as OPTICON pens and bookmarks, the stand distributed copies of the official EU OPTICON brochure and sets of one page handouts describing various OPTICON activities. The posters and handouts can be viewed and downloaded as pdf files from <http://www.astro-opticon.org/handouts.html>

Feel free to print them out and display them wherever you think they may be of interest. Copies of the brochure (ISBN 92-894-3352-3) can be obtained by contacting Karen Disney via the OPTICON website or ordered in bulk from the EU Office for official publications (publications.eu.int). During the three day event the stand had many visitors, some with interests in astronomy and others from individuals with no specific questions, but just a general desire for information on possible joint activities during FP6. We shall see what develops from these contacts, already a representative of the Malta Astronomical Society has been in communication with us.

OPTICON Plans for FP6

At the meeting of the OPTICON partners in Paris in September a number of important conclusions were reached.

Most significantly it was agreed that OPTICON would move forward into FP6 by submitting a proposal for funds to set up an Integrated Infrastructure Initiative (I3) in astronomy. The I3 is a new instrument of the European Commission designed as part of its programme to structure the European Research Area. The OPTICON I3 proposal will include activities in all three areas proposed by the commission, i.e. Access, Networking and Joint Research Proposals.

Although the details of the proposal will have to be endorsed by the partners, a rough outline of what was proposed can be given here. Access activities will include such things as an extension to the ASTROVIRTEL programme to exploit the HST archives and the 2-4m telescope access scheme (COMET). The details of the COMET scheme were clarified by a working group meeting in Cambridge on November 28-29th. The revised COMET programme will be very similar to the scheme outlined in a previous issue, but will no longer be an international time allocation committee as this seems excluded by the FP6 rules. The result will be a scheme that is simpler to implement. We expect 300 nights of time on a variety of 4 and 2.5 metre telescopes to be available, subject to normal peer review mechanisms. Qualifying users of this time will receive travel assistance to allow them to participate in the observing runs, and the telescopes will receive a contribution to their operations cost.

Networking activities remain an important part of the I3 action, and many of the present OPTICON working groups, will continue in similar or slightly modified form under the new structure. The NEON programme, and several new initiatives, will be included as part of the networking activities. It is expected that a major working group for optical-IR interferometry will be one of these new actions.

Joint Research Projects, which are technology oriented activities not scientific projects, will be included as the third element of the OPTICON I3. The technology working group, chaired by Rafeal Rebolo at the IAC in Tenerife, is preparing a list of projects which will be put forward for consideration. These are not yet fully defined but are likely to include topics such as detectors, smart focal planes, adaptive mirrors and interferometry.

The OPTICON I3 will be managed by an executive board, which will be a subset of a larger international advisory board drawn from the major funding and operating agencies across Europe. PPARC has indicated its willingness to continue to act as co-ordinator of the activity and a proposal that the present chairman, Prof Gerry Gilmore, continue to act as chair of the FP6 activity was endorsed by the partners meeting in September.

The next meeting of the OPTICON partners will be on January 24th and will be hosted by the IAC in Tenerife. Up to date information can be obtained from our website at www.astro-opticon.org

Dr John K Davies
(OPTICON Project Scientist)



RADIO.NET

RadioNET brings together the radio astronomy communities involved in the European VLBI Network (EVN), ALMA, and the Square Kilometre Array (SKA), and supports a number of activities in connection with these three major instruments. The main focus of RadioNET has been the enhancement of the EVN as an existing and continually developing research infrastructure for European astronomy. In this issue, I will report briefly on the third annual General Meeting of the RadioNET partners held in Berlin, Germany, on 21 November 2002. Current activities were reviewed and plans made for proposals for the 6th Framework Programme.

- i) *EVN reliability.* The EVN reliability and data quality continues to improve as measures to upgrade the performance of the tape recording systems adopted after a RadioNET workshop in 2001 take effect. A second workshop held in September this year focussed on individual telescope and array calibration. A pipeline has been set up at the EVN data processor at the Joint Institute for VLBI in Europe that is used for rapid analysis of calibration and network monitoring observations, and for a growing number of user projects. It is now possible for users to generate images of their sources within an hour or two of receiving the data from the processor, something unprecedented in the history of VLBI.
- ii) *EVN-2010.* The EVN has decided to adopt a PC disk-based data acquisition system to replace the tape recorder systems currently employed. This will serve to further improve the reliability of EVN operations and improve the quality of data delivered to users. Prospects for using fibre communication links to replace tape and disk-based data transport (so called eVLBI) received a boost shortly after the Berlin meeting. A proof-of-concept has been approved in principle by the national and European academic backbones that will link a number of the EVN telescopes to the data processor in Dwingeloo.
- iii) *EVN Symposium 2002.* The sixth EVN Symposium held in Bonn in June attracted about 100 astronomers from around Europe to the scientific sessions and the Users Meeting. Proceedings have been published by the Max-Planck-Institute for Radioastronomy (Editors: E. Ros et al).
- iv) *ALMA activities.* The big news was the funding of the ALMA telescope mid-year and the subsequent progress in preparing for construction. RadioNET supported a workshop in Bordeaux on prospects for cosmology with ALMA, and participation in the ALMA Community Day in ESO in November. Further workshops are planned in 2003.
- v) *SKA activities.* RadioNET helped support the SKA meeting held in Groningen in August (see article by Phil Diamond for more information on the SKA).
- vi) *Round Table with OPTICON.* The second Round Table was held at the JENAM meeting in Porto in September. The status and timescales of the various activities in

the two networks were discussed as part of the process of keeping the different communities informed of progress.

- vii) *FP6.* RadioNET is planning to submit a proposal for an Integrating Activity involving transnational access to the EVN and a number of the individual radio astronomy facilities, and joint research projects on software, receiver development, and radio frequency interference mitigation, amongst others. Independent proposals for a Design Study for the European aperture array concept for the SKA, and for contributions to the capital costs of ALMA and e-MERLIN will also be submitted.
- viii) *The RadioNET brochure* has been published by the European Commission.

R.T. Schilizzi, RadioNET Coordinator

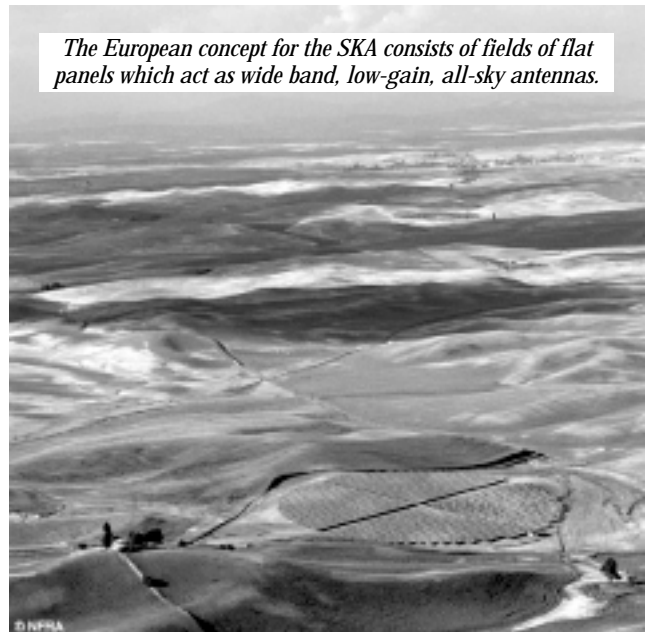
SKA

The Square Kilometre Array

In all fields of astronomy there is always a need for greater sensitivity. Europe is designing a 100-m optical/IR telescope to fulfill these needs in one waveband; for the radio European astronomers are involved in the project to build the next generation radio telescope, the Square Kilometre Array (SKA).

SKA will have a collecting area of a million square metres, about 100 times larger than the most powerful radio telescopes that currently exist. The SKA will operate at wavelengths of a few metres down to a few centimetres. It will transform astronomy, providing a tool that is 10,000 times faster than the best available today. We could build the SKA with today's technology but, in order to make it affordable astronomers and engineers are investigating a variety of design concepts. Some (such as that from Europe) envisage a capability to simultaneously image at multiple points in the sky.

The European concept for the SKA consists of fields of flat panels which act as wide band, low-gain, all-sky antennas.



SKA will enable the generation of radio images of almost every object that can be seen with optical telescopes, as well as many others that remain totally obscured at optical and infrared wavelengths.

The science goals to be addressed with SKA encompass answering questions about the so-called Dark Ages shortly after the Big Bang and the subsequent dawn of the Age of Galaxies, about the large scale structure of the Universe, about how star formation processes evolve throughout the lifetime of the Universe, about the composition of our own galaxy, the Milky Way, and about the multitude of time-variable cosmic objects in the Transient Sky.

SKA has been 'born global'. Astronomical institutes from all over the world, including many from Europe, have joined forces to create the SKA Consortium. An International SKA Steering Committee (ISSC) has been formed. It contains 6 European representatives, and will steer the project through design, funding and construction. Recently, Prof. Richard Schilizzi (formerly of JIVE) was appointed to be the Director of the International SKA Project.

The current timetable for the SKA envisages concept and site selection in 2006/7; requests for international funding shortly afterwards and the start of construction in 2010. First light is planned for 2015.

P. Diamond
Director, MERLIN/VLBI National Facility, Jodrell Bank Observatory, University of Manchester, England.

REPORTS FROM MEETINGS

EUROPEAN ASTRONOMERS AND EXO/ASTROBIOLOGY

From September 16 to 19, 2002, the «2nd European Exo/Astrobiology Conference» was held in the beautiful city of Graz (see www.graz-astrobiology.oeaw.ac.at/).

It is the annual meeting of the European Exo/Astrobiology Network Association (EANA). EANA is for exobiology the analogue of the European Astronomical Society. It was founded in late 2001 with bye-laws deposited in France (see <http://www.graz-astrobiology.oeaw.ac.at/EANA-Laws.html>). It will soon have its Website, hosted by ESA.

The scientific programme was extremely rich, from extremophiles to extra-solar planets, including origins of Life and Solar System space missions and projects (to Mars, Titan, Europa, comets...). More than 500 attendees were present from most of the European countries (Austria: 86, Belgium: 4, Bulgaria: 2, Czech Republic: 3, Denmark: 18, France: 61, Germany: 67, Hungary: 12, Ireland: 2, Italy: 80, Portugal: 4, Romania: 5, Russia: 38, Spain: 43, Sweden: 10, Switzerland: 5, The Netherlands: 42, UK: 32).

If I draw the attention of the European astronomers to this meeting, it is because the astronomical community was extremely poorly represented: less than 10% of the attendees were astronomers or planetologists.

The European astronomical community should be aware that exobiology is going to have very important developments in the coming years. It should not miss this opportunity of a new expansion of the field of astronomy/planetology. I would therefore like to encourage European astronomers and planetologists to attend the next European meeting, to be held in Madrid in 2003. I do also encourage them to join the European Exo/Astrobiology Network Association. The membership submission form will soon be available on the (coming) EANA website; in the meantime more information can be found at www.graz-astrobiology.oeaw.ac.at/eana.html.

Jean Schneider
Paris Observatory

JENAM 2002

GALAXY EVOLUTION IN GROUPS AND CLUSTERS

The Workshop «Galaxy Evolution in Groups and Clusters» debated, along two and a half days (5-7 September), the most recent observations and theoretical work concerning the evolution of galaxies in dense environments (groups and clusters).

With 74 registered participants, and welcoming also numerous members coming from other JENAM workshops, the WS-GE hosted high quality presentations: 36 talks, of which 7 invited ones, and 27 posters. A wide range of topics was covered, introduced by the invited reviews: The Evolution of Brightest Cluster Galaxies (C. Collins), Galaxy Luminosity Functions in Different Environments (S. Driver), The Evolution of Galaxies in Rich Clusters (E. Ellingson), Dwarf and Low Surface Brightness Galaxies in Clusters (L. Infante), The Interaction Between Groups and Clusters and its Interplay with the Evolution of the Galaxy Population (R. Nichol), Spectral, Morphological, Chemical and Color Transformations of Galaxies in Clusters (B. Poggianti). On Saturday, at the end of all sessions, H. Yee summarized the main points focused along the workshop.

The large number of participants, the excellence of all presentations and the interesting discussions that followed, sometimes enthusiastically prolonged during coffee breaks, vouch for the dynamism and present interest in this research field, on which at least four other international conferences and workshops took place earlier this year.

Two main factors drive such enthusiasm: on one hand, the recent observational breakthroughs that have allowed exciting new discoveries, especially at high redshift, unveiling the distant Universe and its constituents, precursors of nearby galaxies and clusters. This knowledge is now being used to support the theories of structure formation and evolution at different hierarchical levels. On the other hand, the powerful computational facilities today available make more realistic and detailed numerical simulations possible; the integration of the correct physics, often oversimplified in the past, and the high resolution that can now be achieved are reproducing more faithfully the interactions among galaxies and between galaxies and the intergalactic medium. And such processes

are undoubtedly strongly intervening in, sometimes even dominating, the still scarcely understood evolution of the galactic population in groups and clusters.

The presented contributions, mainly based on optical researches, were complemented with results obtained in the infrared, radio and X-rays.

More than giving definite answers to the presently open questions, the workshop granted a splendid opportunity for specialists and young researchers to gather and interact, presenting and debating the numerous new results in the area and discussing the definition of the strategies to tackle in the future that will allow to better understand the evolution of galaxies.

Catarina Lobo

HUNTING THE COSMOLOGICAL PARAMETERS WITH PRECISION COSMOLOGY

The last few years saw the development of a plethora of experiments and surveys probing the cosmological parameters. The Cosmic Microwave Background (CMB), the Supernovae (SN) searches and galaxy cluster data, namely via X-rays and Sunyaev-Zel'dovich effect, are among the most prolific giving detailed information about the geometry, age and structure formation of the Universe. The program of the WS-HCP workshop was aimed at highlighting the scientific achievements and to discuss the new environment of «precision cosmology» within these three probes. The objective was to analyse different observational strategies, common problems namely foregrounds, and to assess the impact of observational uncertainties in the determination of key cosmological parameters which describe the primordial universe and the large scale structure formation mechanism.

In the workshop about 40 astronomers participated and 25 talks were given during three days in a relaxed and jovial atmosphere, which was ideal to ignite vivid discussion and to stir interactions between the participants.

The first day of the meeting was dedicated to supernovae data. The debate included a number of important issues. Among them were interesting discussions on physical mechanisms and models of star explosions, studies of the variation of colour and magnitude of supernovae Ia with redshift, and discussions on their use as standard candles. Another exciting subject of debate was the impact of future supernovae projects, like the supernovae observatory satellite SNAP, and their importance to constraint cosmological parameters.

The last two days of the workshop were dedicated to the CMB and large scale structure studies. Concerning the CMB the main subjects in debate were constraints on cosmological parameters from present data, the observation of CMB polarization, Galactic CMB foregrounds, and the new strategies for observing the CMB using: polarisation sensitive bolometers, interferometric arrays for detailed SZ measurements and multi-frequency channel observations, such as the ARCHEOPS experiment and the future all-sky survey to be done by the Planck satellite mission (ESA, 2007).

The discussions on large-scale structure included presentations about the observational properties of galaxy clusters and their theoretical modelling involving both analytical methods and hydrodynamical N-body simulations. Constraints on cosmological parameters using recent cluster X-ray observations from Chandra and XMM satellites were also presented. Concerning extra-galactic cartography, results from the local universe were discussed, like the distribution of superclusters, and methods to be used with the VLT and the Planck and Herschel (ESA, 2007) satellites. The latest results from the 2dF galaxy redshift survey were also debated.

Antonio da Silva (LAOMP),
Domingos Barbosa (CENTRA IST)

VARYING FUNDAMENTAL CONSTANTS

The workshop on The Cosmology of Extra Dimensions and Varying Fundamental Constants, which was part of JENAM 2002, was held at the Physics Department of the University of Porto (FCUP) from the 3rd to the 5th of September 2002. It was attended by about 110 participants, of which 70 were officially registered in the VFC workshop, while the others came from the rest of the JENAM workshops. There were also a few science correspondents from the press.

During the 3 days of the scientific programme, 8 Invited Reviews and 31 Oral Communications were presented. The speakers came from 11 different European countries, as well as from Argentina, Australia, Canada, Japan and the U.S.A. Nine of the speakers were Ph.D. students.

The workshop brought together string theorists, particle physicists, theoretical and observational cosmologists, relativists and observational astrophysicists. It was generally agreed that this inter-disciplinarity was the greatest strength of the workshop, since it provided people coming into this very new topic, from the various different backgrounds with an opportunity to understand each other's language and thereby gain a more solid understanding of it.

The overall aim of the workshop was to discuss the current theoretical motivations for the existence of additional spacetime dimensions, and to confront these expectations with existing or upcoming observational and experimental tests. The interaction between specialists in different areas was quite fruitful, and a number of outstanding issues were identified, which are likely to become the main paths of research to be explored in this area in the coming years.

It was clear that in any theory with extra spacetime dimensions new interactions will naturally arise which will violate the Equivalence Principle at some level. This type of test is, therefore, the most sensitive probe of new physics beyond the standard model. One unavoidable consequence of these violations are spacetime variations of the 'fundamental constants' of nature which we can directly measure (but which are, in fact, only 'effective' quantities in these models). Astrophysical and cosmological tests of these effects are much more promising than laboratory or particle accelerator tests.

On the observational side, two new sets of results were announced which provide evidence for time variation of the fine-structure constant (Webb et al.) and the ratio of the proton and electron masses (Ivanchik et al.) at redshifts around three relative to the present-day values. Other experimental and observational bounds, as well as the possible sources of systematic errors in all of the above methods and some possibilities for future independent tests were also discussed.

Finally, an informal discussion session was organised jointly with the HCP workshop, with the theme being 'JENAM 2020'. Two of the invited speakers of each workshop were asked to imagine themselves giving a plenary talk at JENAM 2020, and summarise the main achievements in the field in the period 2000-2020. In 18 years we will know if truth turns out to be stranger than fiction

Carlos JAP Martins

GALACTIC DYNAMICS

The Galactic & Stellar Dynamics workshop is now a fixture in the JENAM programme going back to 1998. As always the workshop was a self-organised affair, with no pre-set agenda: the convenors and SOC's main job was to assemble a homogeneous programme completely made up from contributions volunteered by JENAM participants.

A total of 32 papers were presented, along with 12 posters. These were then split thematically into three:

- 1) galactic morphology (bars, spirals, bulges);
- 2) galaxy formation and environment (satellites, halos, etc.);
- 3) stellar clusters (observations and dynamics).

A rough balance between theoretical and observational talks was achieved (the programme can be viewed at url <http://astro.u-strasbg.fr/scyon/jenam2002.html>). Such a balance reflects the broad appeal of the JENAM meetings in general, and the 2002 edition in particular. This workshop benefited much from the diverse backgrounds of the attendees.

The review papers gave the workshop much momentum. Two 40-minute review papers were scheduled each day, while normal talks were allocated 20 minutes. Space does not allow me to discuss the string of excellent papers which complemented the six reviews, and I chose to highlight those briefly below (in chronological order):

W. Maciejewski (Arcetri), who discussed the formation and evolution of galactic bars. He highlighted the problems met in accounting for the fine structure of 'bars within bars', a problem that will keep theoreticians busy for some time yet.

Marc Balcells (IAC) showed the close links between bulge and disc stellar populations. Observations of extended bulge-type stars well into the disc of galaxies must set constraints on galactic formation times and merger histories. Will computer models keep pace? Stay tuned.

T. Tsuchiya (ARI) considered the statistics of warps and mechanisms to explain their origin. His recent N-body models of the Milky Way/LMC system suggest a close inter-play

between dark mass and discs, in the way of a (dark) mechanical lever which may then drive the warp.

Ch. Conselice (CalTech) reviewed the statistics of galactic mergers and presented a method of identifying them as function of redshift. The classic interrogation 'where have all the mergers gone?' may soon receive quantitative answers from identification tools now being developed.

G. de Marchi (ESA) reviewed stellar populations in star clusters and observational consequences of their evolution. Models of stellar populations in a variety of clusters would point toward a universal profile. The implications for cluster modelling are clear and should help constrain our understanding of the dynamics of these objects.

Holger Baumgardt could not present his review of stellar cluster dynamics, but we hope to include his paper in the proceedings of the workshop. The proceedings will appear in the EAS Conference Series, and are scheduled to appear in 2003. An early order of the book can be made at a special discount: see the programme web site for details.

The workshop was self-financed and self-organised – up to a point: EAS and LOC sponsored half a dozen of our participants, plus all of the plenary sessions books. We are grateful to them for their generosity. We congratulate the LOC and Mario Monteiro in particular for a truly well organised JENAM.

Christian Boily (Strasbourg)

THE REGIONAL MEETING OF THE EAS SOUTH-EASTERN BRANCH

NEW RESULTS IN STELLAR PHYSICS

The second regional meeting of the South-Eastern Branch of the European Astronomical Society, «New Results in Stellar Physics», was held in Timisoara (Romania) between 3 and 5 October 2002.

The problems discussed during the meeting were related especially to stellar physics and evolution, pulsating stars, binary systems, photometry of variable stars, models of stellar structure. The communications covered both the observational and the theoretical area.

Even if the distances between the neighbour countries of this part of Europe are small, some astronomers who liked to participate, could not obtain financial support from their institutions. So, only a small number of participants were present from Hungary, Romania and Yugoslavia, who had enjoyed unlimited time for discussions after each presentation.

The meeting was organized mainly by the Astronomical Institute of the Romanian Academy (Timisoara and Bucharest Observatories), the Timisoara Branch of the Romanian Academy, the West University of Timisoara, with an important help from the Mayorality of the city.

Finally this meeting gave the opportunity to the participants for visiting this wonderful city of the South-Western part of

Romania, to learn about its history and to feel the hospitality of Timisoara.

The experience of these two meetings encourage us to continue them for a better knowledge of the main topics, that could initiate common research among the astronomers in this part of Europe.

We use this opportunity to announce that the proceedings of the first regional meeting, held in April 2001 in Bucharest, «Solar Researches in South-Eastern European Countries: Present and Perspectives», edited by Georgeta Maris (Romania) and Mauro Messerotti (Italy), will appear very soon.

Magda Stavinschi

WHO IS WHO IN THE EAS COUNCIL



Birgitta Nordström
Treasurer of the EAS

My research focuses on the evolution of the Milky Way Galaxy. A major study of the stars in the Solar neighbourhood is in the final write-up stage. At the same time I am involved in an analysis of extremely metal-poor halo stars as tracers of nucleosynthesis in the first generations of stars. Combining high-resolution ESO VLT spectra of such stars with atomic spectroscopy and laser lifetime measurements gives unique new insights, including the possibility to determine ages through radioactive cosmochronology and thus put limits on the age of the Universe itself.

After obtaining my PhD from Stockholm University, I left for postdoc positions in Switzerland and Canada before settling down in Denmark in 1972. Since then I have been a Visiting Scientist at the Harvard-Smithsonian Center for Astrophysics and Paris Observatory, and a Guest Professor at the Universities of Kiel, Germany, and the Lund Observatory in southern Sweden. I presently split my time between the Niels Bohr Institute in Copenhagen and Lund. Commuting between two countries several times a week is certainly a challenge, but also very fruitful in terms of scientific contacts and inspiration.

As Treasurer of the EAS since 1995, I have participated in JENAM meetings in many European countries that I might not have visited otherwise. My charge has also given me the privilege to work with and get to know many more colleagues from all over Europe, and thus a deeper understanding and appreciation of the diversity in Europe.

EAS CAREERS CENTRE

For the first time, a «Careers Centre» will be provided at the 2003 JENAM. This is intended to help young researchers find out more about jobs and career prospects in Astronomy and Astrophysics and related fields throughout Europe. Organizations from all over Europe will be encouraged to announce their job opportunities here, and facilities will be provided to assist employers and job seekers in making contacts with each other. More details will be provided in the next EAS Newsletter and in the JENAM 2003 announcements.

P. Shaver (ESO)

MESSAGES FROM THE TREASURER

EAS TRAVEL GRANTS 2002

The success of the Grant programme of EAS is indisputable. One effect which we clearly see at the JENAM meetings is that more and more young people participate. Among the many grant applications this year, we were only able to accommodate a fraction, and we regret that many could not participate for financial reasons. Many of our members make voluntary contributions to our grant programme when paying their annual dues. We are grateful for those generous donations and would welcome if more of our members felt it to be their responsibility to contribute.

A total of 8.000 CHF (just over 5000 Euros) was given to participants after selection by the Grant Selection Committee chaired by Michel Dennefeld. The Scientific Organisers of the mini symposia were able to give additional grants from other funds.

At the JENAM 2002 in Portugal EAS was able to give financial support to the following colleagues:

| | |
|-------------------------|----------------|
| Maria Luisa Almeida | Portugal |
| Sara Brough | Great Britain |
| Martin Brull | Germany |
| Anbela Goncalves Darbon | Portugal |
| Sami Dib | France |
| Sona Ehlerova | Czech Republic |
| Michael Fellhauer | Germany |
| Mourad Hamidouche | Albania |
| Pavel Jachym | Czech Republic |
| Ronan Keegan | Ireland |
| Irina Kitiashvili | Russia |
| Mariusz Kosinski | Poland |
| Dana Kovaleva | Russia |
| Arunas Kicinskas | Lithuania |
| Pedro Lacerda | Netherlands |
| Lidia Makarova | Russia |
| Roberta Paladini | Italy |
| Luka Popovic | Yugoslavia |
| Miguel Preto | Portugal |
| Loredana Prisinzano | Italy |
| Cukasz Stawarz | Poland |
| Irina Voloshina | Russia |
| Emmanuel Xilouris | Greece |

The rules for how EAS grants are given are available at the EAS web page <http://www.iap.fr/eas/>

FINANCIAL RESULT OF THE YEAR 2001

As can be seen from the numbers below, we operate with a small budget and welcome any extra contribution and ideas of how to increase the income. Naturally, we are also looking into minimising the expenses and make the maximum use of the means available. One item of discussion is whether the Newsletter should be sent out on paper or if an electronic version can at least partially fill the need. As of 2002, we have made arrangements to save considerably on the distribution costs by moving the printing of the Newsletter.

Below you will find a summary of the financial result (in CHF) of the year 2001 as presented at the General Assembly in Porto in September 2002.

Income

| | |
|------------------|--------|
| Membership fees | 22.225 |
| Donations, sales | 1.557 |
| Development Fund | 5.000 |
| Interest | 1.027 |
| Total Income | 29.809 |

Expenses

| | |
|--------------------|--------|
| Administration | 10.594 |
| Newsletter | 13.922 |
| Grants | 8.000 |
| Bank charges | 1.131 |
| Total expenses | 33.647 |
| Result of the year | -3.838 |

Net assets as per 31 December 2001, amounted to 59.581 CHF.

For the year 2003 the EAS Council has decided to keep the membership fee at the present level (at 50 CHF or 35 Euros for ordinary members) thus lowering the net assets. However, with the higher activity level, we need to reconsider the size of membership fee and other sources of income for future years.

Birgitta Nordström
EAS Treasurer

EAS PUBLICATIONS SERIES

Our series have been launched a year ago, in partnership with EDP Sciences, and the first four volumes have been presented at the JENAM in Porto. Since then another has appeared, and several others are in making.

Here is the list of the published volumes:

1. «Active Galactic Nuclei in their Cosmic Environment»
JENAM Toulouse, September 1999
ed. Brigitte Rocca-Volmerange & Helene Sol
2. «GAIA, a European Space Project»
European High-Level Scientific Conference
Les Houches, May 2001
ed. Olivier Bienaym & Catherine Turon

3. «Star Formation and the Physics of Young Stars»
Summer School on Stellar Physics X, Aussois,
September 2000
ed. Jérôme Bouvier & Jean-Paul Zahn
4. «Infrared and Submillimeter Space Astronomy: An International Colloquium to Honor the Memory of Guy Serra»
Toulouse, June 2001
ed. Martin Giard
5. «Radiative Transfer and Hydrodynamics in Astrophysics»
GRETA workshop Paris, October 2001
ed. Philippe Stee

The texts of the volumes are forwarded to the ADS and CDS astronomical databases. Their summaries are available on the website <http://www.edpsciences.org/eas>, together with informations on the forthcoming volumes, on how to order them, how to submit the texts, etc.

The public selling price is presently 50 euros per volume, for 350 pages, but EAS members are granted a discount of 20% on the public price.

The conference and workshops organizers are asked to purchase at least 60 copies destined to the participants, at 30% discount.

This series has been made for you, to serve the European astronomical community! Whether you organise a colloquium, a workshop or a school on astronomical subjects, you are welcome to publish its proceedings in these series. Don't hesitate to contact me at jean-paul.zahn@obspm.fr.

Jean-Paul Zahn
Scientific Editor
serve the European Astronomical Society

THE AUSTRIAN SOCIETY FOR ASTRONOMY AND ASTROPHYSICS

Scientific research, teaching, public outreach

The new **Austrian Society for Astronomy and Astrophysics** (in German **Österreichische Gesellschaft für Astronomie und Astrophysik**, short **ÖGA**) has been established to represent the astronomers and astronomical institutions in Austria with the primary aim of promotion and propagation of astronomy and astrophysics in science, teaching and among the general public. Furthermore, **ÖGA** considers itself to be the national contact point for society, government, politics, economy, industry and the media, and coordinates common interests of Austrian astronomers.

All major scientific astronomical university institutes as well as a large number of educational organisations are members of **ÖGA**. More than a hundred individual members involved in astronomical (or related) research, representatives of national educational organisations as well as active amateur astronomer associations ensure a broad basis of **ÖGA** in Austria.

The ÖGA is now affiliated with the European Astronomical Society and partner of the Astronomische Gesellschaft within the German-speaking countries. Thus the ÖGA represents Austrian astronomy also in the European context.

Working Groups within ÖGA

A number of working groups have been established within ÖGA

- **European Southern Observatory (ESO)**
One of the main aims of the Austrian astronomy and astrophysics community is to join ESO
- **Public Outreach and Documentation**
- **Support of Young Astronomers and Astrophysicists and Teaching of Astronomy**
- **Light Pollution**

Organisation

ÖGA is organized as a non-profit organisation, with an executive board consisting of nine members, elected every two years by a general assembly. All board members are unpaid volunteers, chosen to provide a geographical balance as well as to cover the different fields of scientific research, teaching and public outreach. The responsibilities, areas of activity and the subgroups of the society are determined by the articles of ÖGA.

ÖGA consists of Full, Supporting and Honorary Members. All natural persons, who are particularly interested in supporting astronomy and astrophysics as well as legal entities (e.g. organisations, institutes, companies) with the related interests, are able to become members. The executive board decides on the admission of Full and Supporting Members after a written recommendation by two Full Members. The appointment as an Honorary Member (to honour outstanding achievements to Austrian astronomy) is accomplished by suggestion of the executive board and through recommendation by the general assembly.

Executive Board

| | |
|------------------------|---|
| President | Prof. Dr. Sabine Schindler, Innsbruck |
| Vice-Presidents | Prof. Dr. Michel Breger, Vienna Prof. Dr. Arnold Hanslmeier, Graz Dr. Elke Pilat-Lohinger, Vienna Dr. Herbert Hartl, Innsbruck |
| Secretary | Prof. Dr. Franz Kerschbaum, Vienna Prof. Dr. Ernst Dorfi, Vienna (deputy) |
| Treasurer | Prof. Dr. Werner W. Zeilinger, Vienna Dr. Alexander Pikhart, Vienna (deputy) |

Official address of the society (Secretary)

Österreichische Gesellschaft für Astronomie und Astrophysik
c/o Institut für Astronomie der Universität Wien
Türkenschanzstrasse 17
A-1180 Wien, Austria

web-page: www.oegaa.at

Franz Kerschbaum
(Institut für Astronomie der Universität Wien)

EAS REGIONAL NEWS

SOUTH-EAST BRANCH OF EAS

The South-East Branch of the European Astronomical Society has been set up on September 29, 2000, in Belogradchik, Bulgaria. The idea had been born several years ago, as a natural consequence of the situation the countries of this part of Europe, except perhaps Greece, are facing (see EAS Newsletter, Issue 21, June 2001).

These countries lived many decades of isolation from the occidental world. Under these conditions, astronomy advanced only because of the creativity of the researchers. Anyway, the lack of specialized journals and books, the interruption of the contacts with the researchers from the «capitalist world», as well as the lack of state-of-art infrastructure, almost stopped the progress of astronomy in the South-East of Europe.

Then the changes occurred at the end of the eighties and all seemed to go better. Unfortunately, it was not so. After a period of general euphoria, we saw that getting freedom is not sufficient; we must know what to do with it. The consequences were immediately apparent. The dissolution of the Council for Reciprocal Economical Aid and the off-hand or false privatization, led to a quick economical decline. A serious consequence of this decline was the migration of the youngsters towards the West. The great institutes and universities of Europe and North America discovered young capable scientists, with a deep general culture (which was developed due to the lack of a western-type entertainment). Moreover, they made a huge effort to integrate into a world they never dreamed, as regards the civilization level or the financial standards.

First, we were glad because the scientific capacity of this zone of Europe is recognized again, they heard again about us. But the lack of hope for a better tomorrow and the temptations of the occidental world had serious consequence such as the dramatic decrease of the staff in the East European research institutions. If we add to this the depression of the few ones left, (generally at the age of retirement), who continue to do astronomy in their native countries, we have the explanation of the present situation.

Unfortunately, the situation is almost the same in Romania Bulgaria, F.Y.R. Macedonia, Russia, or Ukraine; it is needless to speak about Yugoslavia. The problems are the same for all of us, so we are the ones who have to solve them. We know and understand them deeply, and it is more sensible, to search for a solution and find it together.

This is the general idea and the departure point for the initiators of the South-East Branch of the EAS. We thought that it is more effective to meet each other regularly, to speak about our common research topics, exchange ideas and to find solutions for the future. Moreover, the geographic proximity and the existing inter-academic protocols facilitate the possibility of reaching each other in this part of Europe.

The first such Regional Seminar organized by the South-East Branch of the EAS was the regional seminar on solar physics «Solar Researches in the South-Eastern European Countries: Present and Perspectives», held in Bucharest (Romania) between 24 and 28 April 2002.

The next one has taken place in Timisoara (see relevant article in this issue).

There are some bilateral meetings, too, such as the 3rd Bulgarian-Serbian Astronomical meeting in 13-15 May 2002 (Gyuletsitsa, near Sofia). The Department of Astronomy - Sofia University practically organized it (LOC: Prof. Georgi Ivanov, Assoc. Prof. Valery Golev and Anelia Staneva). The meeting was successful and at a good scientific level. More than 40 oral/poster presentations have been presented. Proceedings are in progress and will be published via Publications of the Astronomical Observatory of Belgrade this year. The 5th Romanian - Serbian Astronomical Round table organized in Timisoara is also one.

Another important activity is the ILBA (Information Letter of the Balkan Astronomy) initiated in 2000 by Vladan Celebonovic, who is its editor with Milcho Tsvetkov (<http://www.srbija.org/>).

An issue is released every 1-2 months.

We believe that the S-E European astronomy is a really active component of the European Astronomical Society and together we shall be able to contribute to the progress of the international astronomy at the dawn of the new millennium. Of course, everyone is free to join us.

Magda Stavinschi

BOOK REVIEWS

MAPPING THE SPECTRUM

Klaus Hentschel. Mapping the Spectrum, Techniques in visual representation in research and teaching. 562 pp + xii. Oxford University Press 2002.

Mapping the Spectrum deals with an aspect of the application of spectroscopy to scientific enquiry that is mostly taken for granted the practice of representing spectra in pictorial form, as drawings, photographs, graphs or diagrams. In recent years, as the author explains in his introductory chapter, the study of visual representations in science has come to be appreciated by historians of art, of cognitive science and of printing technology. This book, the first complete study of the subject as applied to spectroscopy of which astronomical spectroscopy, is a major component is a significant contribution to this field.

Spectroscopy is a cornerstone of astronomy or, more properly, of astrophysics. The discovery by Kirchhoff and Bunsen in 1859 of the origin of the dark lines in the solar spectrum opened up the ability to find out, by remote observation, the composition of the heavenly bodies. Without spectroscopy, modern astronomy and cosmology would not exist.

Awareness of the sun's rainbow colours goes back many centuries. One of the earliest experimenters was Leonardo da Vinci who produced colours by the curious method of passing a beam of sunlight through a vessel of water containing bubbles of air. Isaac Newton demonstrated by the use of prisms that the sun's light is composed of the colours of the rainbow, believed by him to be a set of separate primary colours. The first to find dark lines in this spectrum was William Wollaston in 1802 who repeated Newton's experiment but used a slit as entry to the beam of sunlight where Newton had used a round hole. He saw five dark lines, which he interpreted as gaps separating the primary colours, but carried his research no further. Independently, in 1814 the brilliant Munich optician, Joseph Fraunhofer, using his own invented spectroscope with a narrow slit, produced a solar spectrum in which he counted no fewer than 574 lines. His well-known beautiful map of the spectrum, showing an astonishing 350 of these, drawn and engraved on copper plate by himself, is still frequently reproduced in textbooks. The most prominent features, labelled by the letters A to H, were clearly not colour boundaries but belonged to the spectrum itself. Later observers showed that the lines arose partly in the sun and partly in the earth's atmosphere and eventually, in 1849, Kirchhoff and Bunsen made their breakthrough discovery.

The sun's spectrum, the most observed in the whole history of spectroscopy, is an engrossing strand running through the whole story, told here in considerable detail. Indeed, the book would be worth possessing for the history of solar spectroscopy alone. As spectroscopes of larger dispersion and resolution were brought to bear, more lines showed up and many broad features were resolved into individual lines. The first stage in recording such information was the observer's drawing of what he saw; and here already could arise a problem. To draw accurately is by no means an innate human ability. The author points out that many of the early successful spectroscopists (and visual observers generally) had artistic training. Careful observers recorded the lines in the solar spectrum with pens of different widths or of varying heights representing their intensities these were then similarly engraved for printing. The faithfulness of the final representation depended crucially on the skill of the person who carried out this work. Here, the author supplies a thoroughgoing account of the various techniques of lithography and engraving, a topic not familiar to the average astronomer, which makes one appreciate what a challenge it was to publish a paper on astronomical spectroscopy in the nineteenth century.

The invention of photography (hailed as «the pencil of nature») and its widespread use in astronomy from the 1870s onwards might seem to guarantee faithful reproduction. But photography, too, had its limitations: non-linear response to illumination and a non-uniform sensitivity to radiation of different wavelengths. These problems were only satisfactorily tackled with the development of photographic spectrophotometry which did not occur until well into the twentieth century. An added hazard was the practice, considered beneficial by the photographers of the day, of re-touching negatives to enhance and suggest interpretation of faint and doubtful features.

An important use of mapped spectra is the recognition of patterns. In astronomy, the classification of stellar spectra, which has played an enormously important role in the understanding of the physics of the stars, comes immediately to mind. Practised classifiers are able to recognise spectral types almost by instinct. It is interesting, as the author has uncovered, that classification of stellar spectral types and recognition of laboratory spectra of the chemical elements, were favourite class exercises in colleges in the nineteenth century; indeed spectral classification has survived in the programme in many astronomy courses to this day. Other examples of pattern recognition by the human eye and their decipherment are those of the Balmer series of hydrogen, found first in photographed stellar spectra and of molecular bands such as the CO band in the solar spectrum.

This summary can only touch on the wealth of information contained in *Mapping the Spectrum*. The author has produced a veritable encyclopaedia of enthralling knowledge on the visual recording of both laboratory and astronomical spectra from the foundation of spectroscopy to approximately the mid twentieth century. Little-known and forgotten figures in that long battle are brought to light and every piece of information is meticulously recorded in many hundreds of references. The book is beautifully printed and generously and clearly illustrated. There are four pages of delicately reproduced early colour illustrations of which the author is justly proud. This is a volume that merits a place in observatory libraries to be perused with pleasure and profit by modern labourers in observational techniques.

M.T. Bruck

LE MILIEU INTERSTELLAIRE

by James Lequeux, Edith Falgarone & Charles Rytter (2002), EDP Sciences, Editions CNRS.

Le milieu interstellaire is a 487 pages textbook, in French, for graduate and post-graduate astronomy students, and researchers in the field of the interstellar medium. This fast growing field certainly needs such a textbook, since the last comparable one was the 1978 Lyman Spitzer monograph «Physical Processes in the Interstellar Medium». Needless to say that the authors are particularly well qualified for the task for their long experience in the field.

The book contains 15 chapters, a reasonable amount of figures, and 32 colour plates grouped at the end. A table of content, a list of acronyms, a large up-to-date bibliography, a list of symbols, a list of astronomical and physical constants, a unit conversion table, and a rich index provide the necessary complements of such a textbook. However no exercises are provided.

The chapters topics, in order, are: the Galaxy as host of the interstellar medium, radiation and magnetic fields, radiation transfer, neutral interstellar gas, ionized interstellar gas, high energy interstellar medium, interstellar dusts, gas heating and cooling, interstellar chemistry, photodissociation regions, shocks, applications of shocks, interstellar turbulence, star formation, state change and transformation.

The first three chapters form a reasonably succinct but informative introduction. Then the next chapters describe various aspects of the interstellar medium in more depth. There is no particularly obvious logical sequence in the sequence of these chapters, reflecting the difficulty to arrange along a linear order the complexity of the interstellar medium.

Poorly understood aspects of the interstellar medium still abound, so appreciably in several instances contradictory alternative points of views are presented. This is useful for beginners in the field, helping them developing sceptical judgement. Nonetheless the authors do not escape at other places the often seen temptation to express general affirmations about the interstellar medium which are based on properties valid only in the solar neighbourhood. For example the minimum temperature of grains, the typical degree of ionisation, the typical gas density, or that the molecule H₂ should only form with the help of grains are often expressed dangerous generalisations. The interstellar medium is known to possess widely different conditions, which are more or less known depending on strong observation biases. This makes its description particularly difficult.

Overall *Le milieu interstellaire* is a success, representing an invaluable amount of recent information that will be useful for the next generation of students and researchers. Obviously this competitionless book would deserve to be translated and published rapidly into other languages.

Daniel Pfenniger
(Geneva Observatory)

Come join us at IAU2003,
the 25th General Assembly
of the International Astronomical Union,
to be held in Sydney
during the period 13-26 July 2003

Visit our Web-site to find out details of our GA, at
<http://www.astronomy2003.com/>

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EAS A TRIBUNE FOR THE IMPROVEMENT OF TEACHING OF ASTRONOMY IN EUROPE

Paradoxically or not, today, when we realize more than ever how fragile is the planet that shelters us, when the education through astronomy plays more and more an important role, when the cosmic space became an environment in which we freely walk, the teaching of astronomy loses ground in almost all countries. Even more now, when the mobility of the young people is increasing, the difference between the levels of the astronomical knowledge from country to country is wider.

It is superfluous to explain to the astronomers the importance of astronomical knowledge education. But we think that all of us must be convinced about the part everyone can play in promoting this truth in his own country. Everyone can do this, and EAS in particular through its role in European astronomy.

A large campaign has to be initiated with consistent and convincing arguments to make clear how important is astronomy for education in all levels. I can summarize the main arguments to support this.

- 1) **Environment.** The harmful action of the mankind on the Earth proves the fact that we must better know our planet (past and future), in order to protect it, One of the most efficient methods to do this is to find and understand similar planets, to learn from the solar system, what we have to avoid in order to keep the life on the Earth (the greenhouse effect on Venus is only one of a long series of arguments).
- 2) **Astrology.** The social troubles and the terrorism that staggers the world lead to an unprecedented proliferation of astrology. Who could better prove the lack of scientific substantiation of astrology the way given in the media than an astronomer?
- 3) **Space technologies.** Another aspect in favour of the intensification of the astronomical education is that today most of the ground-based technologies are going to be implemented in the cosmic space, whereas the space navigation and communications experience an unprecedented development and globalization process. For this reason NASA and ESA recently developed a series of education programs (see, e.g., «Life in the Universe»), based on a minimum of astronomical knowledge, just for high schools. Of course, EAS could join them or could initiate its own educational programs.
- 4) **Culture.** It is obvious, at least for us, the astronomers, that culture cannot exist without astronomy. As Europe proved, more evolved a civilization was, deeper its astronomical knowledge has been. But this is not known to everyone. Consequently, the contribution of the specialists in the history of astronomy can play just this role, of proving the place of astronomy in culture. It is needless to say that such an information has to be spread especially at the pre-academic level.

If we strictly refer to curricula, we have to consider that astronomical courses build a bridge between mathematics, physics, chemistry, geography, etc. But this would not mean that the astronomy lessons should be hidden in the courses intended to teach these disciplines. Astronomy, even related to the above sciences, is, however, a different and independent science.

I tried to emphasize only few out of a number of arguments that EAS can use for the improvement of teaching of astronomy on the old continent. The main goals could be:

- the introduction or re-introduction of Astronomy as a compulsory curriculum discipline, for a half year or a full year, in the last-but-one or last year of the secondary school

- the teaching of astronomy be performed by secondary school teachers trained within a special framework organized by professional astronomers;
- a more intense program of exchange between universities for a better knowledge and planning of their astronomical curricula and
- the introduction of the teaching of astronomy as topic of discussion during the JENAMs.

Magda Stavinschi

ANNOUNCEMENT

The IAU Task Force for the Preservation and Digitization of Photographic Plates (PDPP) has recently issued its first Newsletter.

The document can be accessed as a pdf file at: <http://www.inasan.rssi.ru/iau/iau5/tgpdpp.html>

Our Newsletter contains reports on plate digitizing and archiving activities that have come to our notice, but we are keen to contact other groups which we have surely missed.

Elizabeth Griffin
(Chair, PDPP)

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JENAM – 2003

12th European Meeting for Astronomy and Astrophysics

August 25 - 30, 2003, Budapest, Hungary

First Announcement

New Deal in European Astronomy: Trends and Perspectives

The 12th *Meeting of the European Astronomical Society (EAS)* will be held in Budapest, Hungary. The meeting will cover the basic fields of astronomy and astrophysics focusing on what will be the major goals of research in the coming decades. It is open to all astronomers who would like to interact and exchange their scientific expertise with their European colleagues, and should provide an excellent opportunity for astronomers from all over Europe to advance their research and strengthen cooperations. During the meeting, both the fundamental astronomical knowledge and the exciting new results in observational and theoretical astrophysics will be presented by experts in the field. Highlights from younger scientists originating from European institutes and workshops covering a number of more specific topics will be organized. Space and time for poster presentations will also be provided.

1. Scientific Organizing Committee – SOC — Lajos G. Balázs (Hungary, Co-Chair), Harvey Butcher (EAS, Holland, Co-Chair), Susi Collin-Zahn (France), Bálint Érdi (Hungary), István Fejes (Hungary), Gerry Gilmore (United Kingdom), Leonid Gurvits (Holland), Mary Kontizas (Greece), Michael Perryman (EAS, Holland), Peter Shaver (ESO), J.P. Swings (Belgium).

2. Local Organizing Committee - LOC — L.G. Balázs (Konkoly Observatory), B. Érdi (Eötvös University), I. Fejes (KGO), T. Hegedűs (Baja Observatory), A. Holl (Konkoly Observatory), I. Jankovics (Gothard Observatory), Z. Kolláth (Konkoly Observatory), L. Szabados (Konkoly Observatory), K. Szatmáry (University of Szeged).

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3. Agenda — *Invited reviews* on outstanding problems in modern astronomy which are expected to become the central efforts of research in the next decades, and short invited *Highlight talks* from younger scientists of European institutes are expected to be given at *plenary sessions*. • *Workshops* covering selected fields of astronomy will also be organized during the Conference, including invited speakers, oral contributions and in some case also poster sessions. Proceedings for some of these will be published. *A Job Market* will be held for the first time at a JENAM. Young researchers looking for work will be able to make contact with potential employers. • One plenary session will be devoted to a discussion of national priorities for large investments across Europe. A preliminary programme and further informations about the workshops and other events will be provided in due course.

4. Conference Location — The Eötvös Loránd University, Budapest, will host the event, with the meeting being organized by Roland Eötvös Physical Society in collaboration with the Konkoly Observatory of the Hungarian Academy of Sciences. Budapest has an international airport, with connections to all major European airports. All other public transports (Train, Bus, etc) can also be used to come to Budapest. It has an extensive network of buses and trams which makes it very easy to go around town, and train and bus connections to many touristic attractions in the region. Important note: Visa may be required for citizens of several European and overseas countries. Please contact your local Hungarian Consulates beforehand (typically no less than one month in advance). Please contact the LOC for visa assistance if required.

5. Accommodation — Accommodation of all classes will be available. The detailed procedure on how to book accommodation will be announced later. To help us planning, please indicate in the pre-registration form available at the WWW site of the meeting, what kind of accommodation you would prefer.

6. Cultural Events — Details of the Social and Cultural Programme for JENAM-2003 will be announced later.

7. Financial assistance — The Local Organizing Committee seeks support for the scientific programme from the Hungarian Ministry of Education, the jointly organizing societies (EAS and REPS), the Hungarian Academy of Sciences and other sources. Special consideration will be taken to secure some support for colleagues from Central and Eastern Europe. However, in the best possible case, this support will only be partial. Please check the next EAS newsletter or the conference webpage.

8. Pre-registration — Please find a pre-registration form available at the WWW site of the conference. Your information will help us estimating at an early stage the number of participants, their accommodation needs and expected scientific activities. In our common interest to hold a well organized conference please fill in the pre-registration form and send it to the LOC before the end of 2002. Please note that to confirm this pre-registration a full registration will have to be submitted in a later stage.

9. Registration fees — The Scientific Organizing Committee has yet to finalize the exact amount of the registration fee, after the financial conditions are completely known. We have agreed to continue the policy of including reduced rates for members of EAS and REPS societies, and scientists or students with small or zero income. Again, more information will be given in due course.

10. Useful Links and Informations — Touristic Information about Budapest <http://www.iit.bme.hu/hungary/budapest/>
— Information about Hungary <http://www.fsz.bme.hu/hungary/homepage.html>
— Eötvös Loránd University, Faculty of Sciences <http://teo.elte.hu/fs/>