European Astronomical Society

NEWSLETTER

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Contents

MESSAGE FROM THE PRESIDENT

This year we are celebrating the tenth anniversary of our society. Most of you know how it started: in June 1990, Alexander Boyarchuk, Martin Huber, Jean-Pierre Swings and Lodewijk Woltjer sent out a letter announcing the possible creation of a European Astronomical Society, and asking the recipients if they were willing to join it. More than 600 responded positively, and the founding act took place the 10th October 1990 in Davos. The next issue of the Newsletter will be dedicated to this anniversary - please contact Mary Kontizas if you wish to contribute to it.

EAS has seriously grown since 1990: it now counts 19 affiliated societies, after having welcomed the Serbian Astronomical Society at the last Council meeting. The membership totals over 1500, a figure which has not changed much in recent years, and which could be higher, considering that we are more than 4000 astronomers in Europe. The recruiting campaign we launched in the fall, by sending the Newsletter to all IAU members of Western Europe, has been mildly successful only, although it certainly helped to make us better known.

Over these 10 years, our major achievement has clearly been the JENAMs: to hold a yearly meeting, each in a different country, jointly with that of an affiliated society, has contributed greatly to promote European astronomy. The curtain has just closed over JENAM-2000, which drew the largest attendance ever: about 900 participants gathered at Moscow State University, where some of the senior colleagues remembered having participated in the General Assembly of IAU in 1958. Our hosts from the Sternberg Institute performed miracles to ensure the success of this meeting: the minor problems, which inevitably arise in such large events, were solved readily without any sign of stress. Nikolai Bochkarev, Anatol Cherepashchuk, Boris Shustov,

Konstantin Postnov and their collaborators deserve our warm congratulations for what they have accomplished.

The plenary talks were, as always, of the highest interest, thanks to the well-chosen speakers, and the parallel sessions were of excellent level, while reaching also the goal of giving more visibility to the scientific production in the New Independent States. The difficult working and living conditions prevailing there were the subject of many discussions, as was the necessity of establishing and maintaining collaborations between Eastern and Western Europe. Prof. Frederico Ferrini came to present the new INTAS campaign, with its extended possibilities of postdoctoral support (see www.intas.be).

The social programme included a visit to the Cosmonaut's training centre, and a memorable banquet in the University dining hall, were we could taste many delicious specialties, including caviar of course. But its climax was unquestionably this evening at the Bolshoi theatre, where we enjoyed a performance of the world-famous ballet company. (Many returned another day for a ballet or an opera.)

Next JENAM will be held in September 2001 in Munich (another city with a serious opera tradition!), on the invitation of the Astronomische Gesellschaft, and with support of the Ludwig-Maximilians Universitaet, of ESO and of the two Max-Planck Institutes. The Local Organizing Committee is chaired by Wolfgang Hillebrandt, and a first planning session with representatives of AG and EAS just took place in Garching. A dedicated website will soon give more information on this event, which undoubtedly will also attract a large audience.

Jean-Paul Zahn

EDITORIAL

First of all I would like to address my congratulations to our Russian colleagues, who have organised this huge meeting, especially after we realised the enormous difficulties they faced and the effort they had to make for accomplishing it succesfully. Details about it are found elsewhere in this issue. It is exactly because of this occasion that this Newsletter is appearing later than the previous years. It was planned to be so in order to include the report of the JENAM-2000 in Moscow.

The next issue of the Newsletter is going to be a special one as mentioned already by the president. The tenth anniversary of EAS will be celebrated next October so any ideas and/or suggestions have to reach me not later than the middle of July. The deadline for articles is the end of August.

The article by Paul Murdin on a common policy of European Astronomy is a very important report of a new project supported by the EU which leads to challenging thoughts and I am expecting a continuation of this issue on other grounds as well.

A second article, that I believe can stimulate similar ones, is the one by J. Teske, who in a very comprehensive and enthousiastic way describes the interaction of Astronomy with Technology.

Finally I point out a small article by two young astronomers who describe their experience with observing the Leonid storm. I hope more young people are prepared to deliver articles for our Newsletter. They are most welcome.

Mary Kontizas

OPINION

TOWARDS AN ASTRONOMICAL POLICY FOR EUROPE

European astronomers collaborate on programmes of work, observe at telescopes operated by consort IA of European states, and meet at scientific colloquia such as the annual JENAM meetings, organised with the help of the EAS. There are therefore networks of European astronomers through which European policies on astronomy have emerged and continue to do so. In many ways this model of free European cooperation - which has happened spontaneously in astronomy, driven by the needs of the science - is the model of cooperation to which Europe aspires.

The model is, however, not focused, nor does it interface readily into the structures of the European Union, including its funding opportunities. Nor is there an overall coordination of the parts of the cooperation networks. In the past year, formal mechanisms have been developed or taken forward to produce a greater coordination of some important parts of the networks of European astronomy, and stronger links to the European Union's policy on scientific research and the infrastructure needed to support science in Europe.

Space astronomy

The European Space Agency pre-dates the EU as the means to co-ordinate and execute European space activ-

ity and its Horizons 2000 programme exists as Europe's space astronomy policy. The policy is currently setting out to develop a greater coherence with national space programmes. At the highest level, ESA is in a dialogue with the EU on the mutual responsibility and competence between the two organisations. This is likely to be a main issue at the next ESA Council meeting at Ministerial level, foreseen in mid 2001.

ESGAC

Space astronomy is being linked to ground-based astronomy in Europe through the European Space and Ground-Based Astronomy Collaboration (ESGAC), set up by R. Bonnet (ESA) and Chaired by the ex-EAS-President and Founder L. Woltjer. So far its scope is a dialogue between ESA and the European Southern Observatory.

ESGAC has considered activity in three areas. There is obvious scope for coordination of space and ground-based observations in multi-wavelength astronomy programmes. Such a need is driven by the space missions of Horizons 2000, for example, currently, the XMM-Newton Observatory. Technical development projects are also being co-ordinated, for example interferometry, relevant to VLT and space missions such as IRSI-Darwin and LISA.

Space and ground-based astronomy archives

ESGAC has also considered co-ordinating space-and ground-based observational archives. Observational archives contain undiscovered science, including unformed observational subsets, information about variable objects, pre-discovery observations, serendipitous observations of field objects adjacent to the primary target object, etc. An archive may also be a source of training data, perhaps only for student exercises, but perhaps also as a research tool, for pilot or small projects. An archive of data from a small collection of telescopes constitutes an additional 'free' telescope. (This is true of the three telescopes of the Isaac Newton Group on La Palma, where data is withdrawn from the common archive at the same rate at which each of the telescopes deposits it.) US initiatives are underway under the title 'National Virtual Observatory', and the EU under Framework 5, with its interest in promoting wide access to large facilities and archives, has funded a project 'AstroVirTel' which will help develop the exploitation of astronomical archives in Europe. A call for proposals under this initiative has been issued with a deadline of 15 June 2000 (see www.stecf.org/astrovirtel/). The issues to be solved to make archives useful are to control data quality (for example, in ground-based astronomy the observational conditions may be key), to improve interoperability by defining common interfaces and to develop specific tools and support.

Opticon

ESGAC has passed the European activity on developing ground-based archives to Opticon, the Optical and InfraRed Coordination Network, whose inaugural meeting took place at Greenwich on April 18, 2000. Led by Prof. G. Gilmore (Cambridge) as PI, Opticon consists of 14 partner organisations and 12 associates, comprising some of the major observatories, astronomical research institutes and funding agencies of Europe (EAS is an associate). Opticon aims to be inclusive and the people listed in this article will in general welcome contact and expressions of interest. Opticon will use the JENAM meetings to report on progress, and involve the wider Community. The first such discussions will be at the Munich JENAM in September 2001.

Opticon is funded by the EU with 1 Meuro for a 4-year programme, to make reports on various areas of common interest to the EU and astronomy. A half-time manager is being sought for appointment in Edinburgh (the other job requirement relates to 100 - metre optical /IR telescopes, and there is a 30% research content; email ajl@star.roe.ac.uk for further details of this new position).

At the inaugural meeting, Opticon started by setting up programmes of work as follows.

Elite Fellowship programme

The current EU Fellowship programmes (e.g. the Marie Curie fellowships) are targeted towards regional development issues. P. Benvenuti (ST-ECF) has proposed an elite fellowship programme ('Oort Fellows') like the Hubble Fellowships in the USA, or various European national programmes. Oort Fellowships would aim to provide opportunities for research at the highest scientific level. One of their features could possibly be that they would help as a reverse brain-drain mechanism back from North America to Europe.

Such a programme is not possible under Framework 5 of the EU's research programme, but is being studied (generalised to include other sciences) for inclusion in Framework 6, with the leadership of a Working Group being set up by Opticon.

Archives

Opticon had proposed a study of astronomical archives to the EU and accepted the discussion at ESGAC. It set up two associated Working Groups. The first (led by P. Benvenuti) is to study the minimum to optimum requirements for archives to be used as research tools, reviewing the existing archives. The second (led by Françoise Genova, Strasbourg) is to look at the technical possibilities which would improve interoperability.

Data Reduction software

It had been proposed that it might be possible to create commonly useful astronomical software for data reduction. Wide field imaging, multi-object spectroscopy, and interferometry could be areas where this might be widely useful. The FITS standard already exists as a data transport standard. ESO would lead an Opticon task force to see if an extension was feasible and desirable.

Medium-sized telescopes

Telescopes in the 1-4 m class abound in Europe and could be generalised into a European observatory, rationalising instrumentation, and broadening out the access arrangements to students and to astronomers of those recent and prospective EU countries that have fewer opportunities for astronomical observations. This would have an educational function, providing first-hand observing and instrumental experience in the time when the largest 8-m class telescopes are queue-scheduled, as well as a developmental function. It might also be a step in the natural progression as telescopes have served single institutions, individual countries, consortia of countries and, ultimately, continental and global associations (like Europe). There would also be, of course, scientific opportunities for new kinds of research, when medium-sized telescopes are available for longer or dedicated programmes (for example, discovery of exoplanets) as the intense focus of research shifts to the 8-m telescopes. These changes to operation and development could both bring in additional resources and free-up present resources for future larger facilities, even as much as halving the cost to current budgets of the medium telescopes. Opticon aims to produce a report on these possibilities.

Overwhelmingly Large Telescopes

There are at least five projects to study optical/infrared telescopes in the 30-m to 100-m, class: the ESO-led OWL (100-m), the US-Gemini MAXAT (50-m), the US ELT (50-m), the California ELT (30-m) and the Lund 50-m.

The projects have created an informal association, 'Club 100' (where '100' may be read as metres or feet). ESO is setting up and operating a web-site and a newsgroup to host and share study information, to avoid duplication of work. The UK Astronomy Technology Centre will host a science workshop in Edinburgh (foreseen on 25/6 September 2000). Of course the technology development is a key component of the studies but the science requirements are also not yet fully coherent and focused on the telescope specifications. For example, what is the size of ground-based telescope that would out perform NGST at UV, optical or infrared wavelengths, and what does this mean in terms of optical quality and infrared performance? Opticon set up a task force to aim to produce such a science case by May 2001, led by R. Gilmozzi (ESO) with co-participation by A. Renzini (ESO), and G. Gilmore (Cambridge).

Paul Murdin

INTERACTION OF ASTRONOMY AND TECHNOLOGY

AN HISTORICAL PERSPECTIVE

Practically everyone is fascinated by the results currently being achieved by astronomical research, some of which are truly spectacular. We all share an interest in the vast universe surrounding our tiny Earth. This sense of curiosity about the cosmos has been with us right since the early days of humanity. But what reasons - aside from curiosity - could there be for our modern industrial society to concern itself with astronomy? In our media age of "Enterprise", "Stargate" and live transmissions of images from satellite-supported telescopes, our interest in the infinity of space continues undiminished. Indeed, it would seem to be growing, despite the fact that - or maybe precisely because - there are so many crucial problems and global conflicts to be resolved on the Earth. Using some examples, I shall examine the close correlation of astronomical research with telescopes and industrial development.

In the days when our early ancestors had nothing but their unaided eyes to gaze with amazement and bewilderment at the celestial bodies above them, there was barely any difference between astrology and astronomy. Initially, their observations were focused primarily on the phenomena of the sun, moon and stars. How they interpreted what they saw we do not know, but we do have evidence that impressively chronicles their attempts to understand the workings of the heavens. This marked the beginning of man's endeavors to measure his

own life cycle using natural phenomena.

Astrology, the spiritual interpretation of celestial phenomena, and astronomy, the exact science of measurement and explanation, went their separate ways many centuries ago. Since then, thanks both to the advances achieved in mathematics and to many technical inventions, astronomy has experienced what can only be described as a meteoric development.

In ancient Egypt, for example, the sun, moon and stars were attentively observed by priests. The desire to measure time more effectively with their life and growth cycles led to the chronicling of astronomical observations. This resulted in the first lunar calendar with 365 days consisting of 12 lunar cycles, each with 30 days, in addition to 5 corrective days. This calendar was used by the Greeks and Indians for over 3000 years as a basis for their methods of time measurement. The processing, production and transportation of construction materials such as adobe, wooden beams and blocks of stone were perfected to a very high degree for the erection of such large monuments as the pyramids. The sole purpose of the unique megalith constructions of Stonehenge and Avebury in England was to document astronomical relations and processes such as the solstice. These enormous constructions testify to the technological capabilities that allowed the techniques of astronomical observation of this time.

As mankind became more mobile, there was an increasing desire to find ways of measuring time and determining locations during journeys. Transportable sundials and aids for orientation using the positions of the stars were developed precisely for this purpose. These ingenious little instruments once again reflect the capabilities of technology at this time and man's ability to process the various materials at his disposal.

In 1025, the year in which the Arab naturalist conducted his experiments with glass lenses, the science of light, in other words optics, was born.

After the advent of optics, without which today's state-of-the-art telescopes and high-performance lenses would simply not exist, 200 years were to pass before Roger Bacon used convex lenses in 1249 as spectacle lenses to correct long-sightedness. Another 200 years later, in 1451, Nikolaus von Kues used concave glass lenses to correct short-sightedness. In the 16th and 17th centuries the Dutch were also one of the leading nations in many fields of technology. Two excellent examples are the creation of the microscope by Zacharias Janssen in 1590 and the construction of the first telescope by Hans Lippshey in 1608. These instruments would not have been possible without the invention of the lens approximately 600 years before.

There is another interesting example in the field of hydrostatics, the fundamental law of which was first formulated by the Dutch mathematician Simon Stevin in 1583. The first use of this branch of physics for an astronomical telescope was implemented in 1948 after almost 20 years of planning.

Due to its large moving weight of about 530 tons, the 200 inch Hale telescope, an absolutely gigantic instrument in its day, could only be moved with the aid of a hydrostatic thrust bearing, as the friction would otherwise have been too high and the movements too imprecise. This totally new type of bearing was so successful, i.e. the friction was so low, that additional friction elements had to be inserted to dampen vibrations during the movement of the telescope. Here once again, 350 years had passed between the discovery of a physical law and its technical implementation. Hydrostatic or hydrodynamic bearings are now standard in processing machines in the tool industry and in large telescopes.

The selected examples show that, in the past, long periods of time passed between a technical invention and its practical implementation. Today, these times are becoming shorter and shorter, allowing a new technology or a novel technical solution to be used shortly after its inception with minimum delay.

In 1895 Wilhelm Conrad Roentgen discovered X-rays. With the first X-ray satellites in the sixties, astronomy began to obtain a picture of the universe in the wavelengths of X-ray light. For the enhancement of this technology to enable its use in astronomical instruments, very sensitive X-ray detectors also had to be developed. These detectors, which were originally conceived solely for use in astronomy, are currently widely utilized in medicine, for passenger security checks in airports and in other areas relevant to safety.

In 1932 Karl Guthe Jansky used simple receiving technology to detect a radio source in the centre of our galaxy. This discovery marked the birth of radioastronomy - but about 20 years were once again to pass before the technologies were enhanced in the fifties. The subsequent results of these developments had a major impact on medicine in the form of magnetic resonance imaging (MRI). Further applications include methods of earth reconnaissance and telecommunications.

A fascinating example illustrating the influence of the requirements of astronomy on technology is the extreme

demands made on the thermal stability of the mirrors in astronomical telescopes. In the seventies, astronomers needed a mirror material that was practically insensitive to temperature fluctuations in order to ensure that the optical quality was in no way impaired. This led to the development of glass-ceramic materials by various glass manufacturers. The most famous of these materials is Zerodur with its outstanding material properties from the firm Schott. With minor technical modifications, it was possible to use the Zerodur technology originating in astronomy to develop Ceran(r), a material that is used as a mass-manufactured product for many different purposes, e.g. for hobs on electric cookers.

With the increasing population and the availability of low-cost sources of energy, the intensity of street lighting in towns and cities is constantly growing. This means that one of nature's wonders - the dark night sky - is falling victim to man's pollution of his environment. Extensive experiments, e.g. in the Jena municipal area in Germany, performed in collaboration with the Karl Schwarzschild Observatory in Tautenburg have provided exact data on the influence of urban lighting and the resultant brightening of the night sky. Astronomers for their part endeavored to counter this light pollution by suggesting new types of lamps and more economical shielding to industry. As a result, sodium lamps were developed in 1985, cutting operating costs and reducing the light pollution of the sky.

Unlike the profit-driven research performed into its application-oriented spin-offs, the costs of astronomy itself are not easily justified. Astronomy is basic research whose ultimate task is to ask new questions and seek answers to them. This cycle of tasks is often the source of new technical, technological and social developments.

As the above examples show, there has been an interaction between astronomy and technology right from the early days under many different circumstances and within different time scales.

However, astronomy also poses questions to fields of research which lie totally outside its own bounds.

Energy production, an absolute must for progress to be made in industry and society, is faced with the challenge of providing large amounts of energy in an environmentally sound and economical way. In 1929 the Russian-American physicist George Gamov was the first researcher to recognize the possibility of hydrogen fusion in the same way as can be observed on the sun, our closest star. Attempts have been made for some time now to generate this nuclear fusion visible in astronomy synthetically in laboratories and research facilities - a huge branch of industry has been created as a result of astronomical observation.

The problem of global warming was first postulated in 1896 as the possible destiny of our earth by the Swedish physicist Svante Arrhenius when he was studying the atmosphere of Venus. Since then, this theoretical assumption has proven to be correct and many other new disciplines in various fields of science are seeking a solution to this problem which is of such fundamental importance for the survival of humanity.

Another topical example is the Seti@home project of the Planetary Society. More than 40 years ago, the search for extraterrestrial life began with a sensational article in Nature magazine. (The abbreviation SETI stands for the Search for Extra Terrestrial Intelligence.) In this project scientists are combining many millions of frequency channels for extraterrestrial radio signals, a very difficult and complex process due to cosmic noise. To extend the computing time required to almost infinite proportions, the experiment harnesses the spare power of millions of Internet-connected PCs. The program used is a screen saver that scans the data, which are split up into little packages, for radio signals from extraterrestrial beings. Depending on the configuration of the computer, this evaluation takes between 15 and 100 hours, the results are transferred back to the address, and a new data package for Seti@home is loaded.

Astronomy is often described as the oldest of all existing sciences. It has shaped our conception of the world and is an important part of our human culture.

Starting with the simple astronomical knowledge of the Stone Age cultures 5000 years ago and the advanced astronomy of the Greeks - Aristarchos von Samos (ca, 320 - 250 BC) already postulated a heliocentric conception of the world - it was not until the 16th century that the sun became accepted as the centre of our planetary system thanks to the work of Nikolaus Kopernikus.

After Johannes Kepler and Isaac Newton had explained the motions of our solar system, Wilhelm Herschel and Edmond Halley turned their attention to the distribution of the fixed stars by counting the stars in different areas of the sky. Edwin Hubble determined the distances of galaxies and was the founder of the Big Bang theory.

All advances made in our astronomical view of things were attributable to the observation possibilities provided by telescopes. This started with the 9x magnification of the Galilean telescope, the 4.2m Herschel

telescope and the 5m Palomar telescope and has culminated in today's large telescopes of the 8 to 10m class and space telescopes.

Thanks to the observation results they have provided and to our interpretations of them, it has always been and continues to be astronomical telescopes - today with additional state-of-the-art equipment - which have added valuable stones to the complex mosaic that constitutes our knowledge of the universe.

These modern tools - the telescopes of astronomy - will continue to evolve and adapt to the dramatic developments in technology promised by the 21st century. Even now, the production of telescopes with main mirror diameters of up to 100m is being considered - a unique technical challenge that will most certainly have a major impact on the overall level of technology and on our conception of the world in which we live.

Hans-Joachim Teske

REPORTS FROM MEETINGS

JENAM-2000

The 9th EAS General Assembly, which was held jointly with the 5th Euro-Asian Astronomical Society Annual Meeting, is now a history and it is time for some conclusions. The statistics is still under analysis and we operate with preliminary numbers. JENAM-2000 was attended by more than 900 participants, so it sets a record of all JENAMs. On the other hand, the number of participants from Western Europe was typical of such a conference. That large number of attendances (2-3 times the usual number) is explained by the huge interest to astronomy in the former USSR (fSU). For many scientists in the NIS this meeting presented the unique opportunity to meet many of colleagues from Western and fSU countries, to start new cooperations, and to make new friends. Participants came from 45 countries, including very distant ones (USA,India, Mexico, etc.). Obviously, the Russian group was the most numerous. Thanks to the generous contributions of several Institutions, notably Moscow State University, the EAS, the INTAS, Russian Ministry of Science and Technologies, the RFBR, and some others, the Local Organizing Committee could offer many various grants and partially cover the registration fee for most participants. Due to unusual date of this JENAM meeting, the LOC and SOC had rather limited time to organize the conference. Electronic registration system has been developed quickly. This is only second experience of the electronic JENAM registration, and it is still quite new for many people. Probably, this explains why more than 500 participants have encountered difficulties with the early registration. The JENAM-2000 was hosted by the Moscow State University (MSU), so nicely depicted on posters and on the Abstract Book cover. Halls and lecture-rooms of the MSU welcomed participants of the JENAM plenary sessions, sections, joint discussions and associated symposia and colloquia.

Total of 12 parallel scientific sections covered almost all current fields of astronomical research. The titles of sections were "Early Universe, inflation, and cosmological constant", "Morphology and dynamics of stellar systems: star clusters, galactic arms and rings", "High energy astrophysics with XMM, INTEGRAL, and SPECTRUM-X", "Binary systems and their evolution", "Supernovae, neutron stars and magnetars", "Feedback and the ISM structure in the star forming galaxies", "Solar cycle: Sun at the top of maximum", "The Central engine of AGN: structure, feeding and evolution", "New trends in modern celestial mechanics", "Ultra-high angular resolution in astronomy", "Astronomical data acquisition, processing, and storage: modern facilities", and "Gravitational lensing". Some new exciting results were discussed during joint discussions "Gamma-ray bursts and their hosts", "Dark ages $100 > z > 10$: objects and their observabilities", and "Gravitational wave astronomy". Also with the JENAM meeting some connected colloqia and symposia were held, dedicated to problems of the history of astronomy, astronomical education and the impact of scientific societies on astronomy in Europe. A special meeting has been organized to allow young astronomers to present their scientific results.

Participants of the conference were greatly impressed by the plenary talks (and numerous responses from participants confirm this), given by outstanding scientists I.Novikov (TAC, Denmark, on the problems of investigation of the Cosmic Microwave Background), J.Einasto (Tartu, Estonia, on the 130 Mpc scale problem), T.Lozinskaya (SAI, Russia, on the supernovae and stellar winds in the interstellar medium), M.Moniez (LAL, France, about latest microlensing results), R.Sunyaev (IKI, Russia, on the accretion onto black holes and neutron stars), Yu.Balega (SAO, Russia, some prospects for the next century observational possibilities of large Russian optical telescopes), G.Fishman (MSFC NASA, USA, on the GRB and a Next Generation GRB Observatory), M.Haehnelt (MPA Germany, on the probing the high-redshift Universe with the Lyman alpha forest), P.Andre (Saclay, France, some issues of the observations of the earliest phases of star forma-

tion), P.Shaver (ESO, highlights of VLT observations), S.Collin (Meudon, France, about active galactic nuclei), A.Fridman (INASAN, Russia, problems and findings concerning with galactic discs), A.Linde (Standford, USA-CERN, Switzerland, on the inflation and creation of matter in the Universe), P.Ricci (Pisa, INFN, Italy, news of gravitational astronomy), L.Ksanfomaliti (IKI, Russia, comparative analysis of the Solar System and exoplanetary systems), W.Wamsteker (ESA, on the World Space Observatory).

It is practically impossible for reasons of space to mention many excellent reviews and talks given at JENAM-2000: these clearly showed how lively European Astrophysics is. Because of the huge number of abstracts submitted we chose to change the usual abstract book layout and to make it more compact. We think that this layout can be used in future conferences, for the sake of saving forests. More than 400 oral and 350 poster presentations were given. Many of them contained new results that, despite obvious language problems, raised the interest of the audience.

Gordon and Breach Science Publishers that publish the EAAS scientific journal Astronomical and Astrophysical Transactions (AApTr) permitted to allot no more than 900 journal pages for partial publication of JENAM2000 proceedings (invited and oral contributions only). Under such circumstances proceedings of only several of JENAM2000 sections may be published in AApTr (see e-mail by N.Bocharev to EAS members).

As for the social events and tours, JENAM-2000 offered the participants a wide choice of local and long-range trips (Moscow City tour, Pushchino Radioastronomical Observatory, Sergiev Possad, Cosmonaut Training Center, St.Petersburg, Special Astrophysical Observatory, and others). The most memorable musical event was the splendid performance in the Bolshoi Theater. As usual, the EAS Council meetings and the EAS Business meeting have been held, but it is a topic for a separate article for the EAS Newsletter. We would like to thank all participants for their patience and valuable scientific contributions.

Boris Shustov & Dimitri Wiebe

EVOLUTION OF GALAXIES

Three Euroconferences on the Evolution of Galaxies Supported by the European Commission, Research DG, Human Potential Programme, High-Level Scientific Conferences Contract HPCF-CT-1999-00065

One of the objectives of Scientific Conferences supported by the European Commission is to confirm the international role of Community Research. Europe, as is known, was the home of many fundamental works related to our understanding of the evolution of galaxies both on the observational and theoretical side. Significant advances are expected in the coming years with the commissioning of new instruments in which European countries have largely invested (VLT, FIRST, XMM) and with the new generations of models that will allow a realistic description of the Evolution of Galaxies constrained by the key observations to be secured. The possibility offered by the European Community to present a project of conferences over a period of three years offers an valuable opportunity for observers, theoreticians and modelists to meet and discuss in detail each aspect related to galaxy evolution.

From 23 to 27 May 2000 was held in Granada (Spain) the first conference of the series, devoted to the observational clues to our understanding of Galaxy Evolution. It opened with Danielle Alloin (ESO) reviewing the Challenging Observations with the New Generation of Large Telescopes and Francesca Matteucci (Italy) presenting the Best Observables from the Point of View of a Model Maker. During five days, reviews and communications were presented on such issues as the Interstellar and Intergalactic Medium, the Chemical Composition of Galaxies, Observational Evidence on the Evolution of Stellar Populations, the Structure, Dynamics and Environment of Galaxies, Evolution with Redshift. Authors of posters had an opportunity to advertise their work with one transparency. Each day, a discussion was organized on the topics of the day. The conference was closed by John Huchra (US) evoking prospects for Galaxy Evolution in the New Millenium.

Participants came from over 20 countries in Europe and across the oceans. All genders and ages were fairly represented, and one of the successes of the conference was the lively discussion sessions where many young researchers took part actively.

Residents from Granada were offered a public lecture in Spanish by the Conference participants Enrique Perez and Guillermo Tenorio-Tagle on how is Man a Product of the Evolution of Galaxies. The Conference was announced and commented in the public media, and several astronomers have been interviewed in radio and TV programs, complying with our duty of raising the public awareness about Science.

Although the main actors of Scientific Conferences are the researchers who participate in them, one should not

forget that a conference owes a lot to many persons and institutions. It is not possible here to name all those who have contributed to the success of the Granada conference, but let me at least express my thanks to the chairperson of the conference, Jose Vilchez, and to the Local Organizing Committee from the Instituto de Astrofisica de Andalucia. They have dealt with all the practical aspects linked with the conference, making it run smoothly and pleasantly and in addition they made us discover the beauties of the Alhambra by night and the magnificent view on Granada from Carmen de los Martires.

It is now time to think about the second conference, chaired by Laurent Vigroux, which will take place in St Denis de la Reunion (France) in October 2001, and will review the relevant Basic Building Blocks and small-scale processes in Galaxy Evolution.

The third conference of the series, chaired by Gerhard Hensler, will take place in Kiel (Germany) in July 2002 and will be devoted to the overall understanding of Galaxy Evolution, from Simple Approaches to Self-consistent Models.

News from the conference series will be reachable in due time from the website: http://www.daec.obspm.fr/ThreeConf.html.

Grazyna Stasinska

THE ROMANIAN NATIONAL ASTRONOMICAL COMMITEE

Romania has an old tradition in astronomy. To support this assertion, some examples would be sufficient. The Dacian sanctuaries of Sarmizegetusa Regia provide evidences of the astronomical knowledge of our ancestors as far back as in the 1st century. The father of the Christian Era, Dionysius Exiguus, was born on the Romanian territory, at the end of the 5th century. The first Romanian astronomical observatory, that in Oradea, was built a century before Tycho Brahe's observatory in Uraniborg.

More recent epochs bring other evidences of the astronomical activities in this part of Europe, and of the relations with renowned West-European astronomers (M.Hell, J.D.Cassini, F.Marsigli, U.J.J. Le Verrier, etc.), as well.

Immediately after World War I, the first scientists who realized the importance of their union for the achievement of the great goals they had proposed were the astronomers. The International Astronomical Union is founded in 1919. Romania understood the necessity of an immediate integration in this organization, along with other 16 countries. The Romanian astronomer Nicolae Donici has participated in the very first Congress of the IAU, held in Rome in 1922. In 1928, following repeated interventions of the Romanian astronomers at the authorities of that time, which hardly faced the consequences of WW I, the latter ones accepted to pay the respective due (300 FF gold), and Romania became a member of the IAU.

Romania is represented in this international organization by the Romanian National Astronomical Committee (RNAC), founded two years later, in 1930. This one gathered together the most representative personalities of the national astronomy and mathematics of that time, the Romanian traditions in mathematics and celestial mechanics actually being very well known. The first President of the RNAC was Nicolae Coculescu (1866-1952), who also was the first Director of the Astronomical Observatory of Bucharest, created in 1908. He was assisted by Professors Constantin Popovici (1878-1956, Director of the Iasi Observatory, then of that of Bucharest) and Constantin Parvulescu (1890-1945), Director of the Cluj Observatory. The contributions of the latter one to the study of galaxies, globular clusters, and binary stars were highly appreciated by the IAU, which assigned his name to the asteroid No. 2331

Therefore, 70 years were elapsed since the RNAC is practically uninterruptedly working. It also is the organization which represents the Romanian astronomy in the European Astronomical Society since 1990.

According to its statute, the RNAC has: - "to contribute to the development of the internal and international cooperation, as well as to the strengthening of the relations between the Romanian and foreign specialists, for the benefit of the scientific progress. - tu support the development of the Romanian scientific research in various branches of astronomy; - to support the development of the astronomical teaching in Romania, as an important component of the national scientific culture."

These aims are fully justified if we consider the existence of an extremely small number of professional astronomers among the 23 million inhabitants of Romania: about 25 professional astronomers in Bucharest (at the Astronomical Institute and at the Faculty of Mathematics-Mechanics), 15 in Cluj (at the Observatory of the Astronomical Institute and at the Faculty of

Mathematics and Computer Science), 3 in Timisoara, and 3 in Iasi. Of course, we must also have in view some teachers of mathematics, physics, or geodesy, engineers, other professors and scientists who, without being astronomers, maintain the relationship with this science, or, by means of their activity, support - in a way or another - the progress of astronomy in Romania.

Here the role of the RNAC becomes obvious: it ensures the possibility of cooperation between them, providing, for instance, the opportunity for a presentation of their researches within the framework of the national scientific sessions organized yearly by the RNAC along with the Astronomical Institute, or even within the framework of special national seminars, as those dedicated to the total solar eclipse of August 11, 1999, whose maximum was in Romania.

Taking into account the financial situation of Romania, still precarious, the RNAC has to intercede with the national authorities for ensuring the continuity of a science that seemingly does not contribute to the improvement of the country's budget. We say "seemingly" for there are situations in which the astronomy has important contributions in this domain (for instance, the unprecedented flux of tourists who entered Romania on the occasion of the eclipse).

During the difficult period Romania is crossing, when the science or culture are practically negligible compared to the economy, the RNAC has a much more complex role to play. It must support the astronomical education at all levels (primary school, secondary school, universities). It must also pay attention to the popularization of astronomy, especially in an epoch and in a European zone in which the "atheistic-scientific education" of the last decades was followed by the "epoch of paranormal and occult sciences". The activity of the RNAC in these domains is significant; it initiated a vaste educational programme, at national level, "The Astral Hour of Romania", it supported the set up of the Romanian Association for Education through Astronomy, it also supported the publication of many books and booklets of astronomy.

Of course, all these tasks of the RNAC are hard to fulfil in the actual conditions, when: - it has a relatively small number of members (about 70; among them, about a half are active); - any support is lacking, not only at a governmental level, but also at the level of amateur astronomers (extremely few in an epoch when the people cannot dedicate either money or time to astronomy); - the interest in culture is continuously diminishing; - the young people is ceaselessly leaving Romania for countries with a higher standard of life; - the "competition" of astrology and of the erroneous and alarming informations provided by mass-media is unprecedented. All these actually are the consequences of an economic recession, which, even in the situation of an invigoration, will influence strongly and for a long time the scientific and cultural level of the population.

These difficulties make the RNAC face the most acute problems and the most hard tasks it ever faced. It has the mission to counteract the present situation and to find the solutions for surpassing this period, more difficult and more long than expected. For this reason the RNAC supports the clubs and associations of amateur or professional astronomers; it supports the efforts of the Astronomical Institute to end the building of a Planetarium in Bucharest (the first one in the Capital intended to the public); it supports every scientific or cultural event related to astronomy; lastly, it supports by all means the young people who continues however to love the astronomy, regardless of the fact that they are working in Romania or outside this one's frontiers.

Magda Stavinschi

THE CALENDAR PATENT OF 1700 AND THE HISTORY OF THE ASTRONOMISCHES RECHEN-INSTITUTE

The Astronomisches Rechen-Institut (ARI) celebrates in the year 2000 the 300th anniversary of the 'calendar patent'. The ARI considers this calendar patent as its basic origin. It was issued on 10 May 1700 in Berlin (Cölln an der Spree) by the Elector (Kurfürst) of Brandenburg, Friedrich III., which became in 1701 as Friedrich I. the first King in Prussia (Preuen). An original issue of the calendar patent (see copy on http://www.ari.uni-heidelberg.de/geschichte/pat-gross.jpeg is still kept in the archives of the ARI. In this edict, electoral duke Friedrich III. (who became later King Friedrich I. of Prussia) granted a privilege to the academy of sciences to be the sole editor of calendars. For a long time the academy of sciences financed all their astronomers by the income from the calendar patent. The main duty was to edit an astronomically correct calendar. Nowadays ARI still computes and publishes the annual database for calendars in the Federal Republic of Germany. If you happen to see setting or rising times of Moon or Sun in a German calendar, it has most probably been taken from a publication of this institute.

For many years the ARI was an integral part of the

Berlin Observatory. From 1776 until 1959, a central task of the ARI was to publish the 'Berliner Astronomisches Jahrbuch', which contained astronomical ephemerides. In 1874, the ARI became a distinct unit ('Rechen-Institut'), and in 1896 it was fully separated from the Berlin Observatory as the 'Königliches (= Royal) Astronomisches Rechen-Institut'. During the Second World War, the ARI was attached to the 'Kriegsmarine' (German Navy) and was moved in 1944 to Sermuth, a small village in Saxonia. There the ARI was 'captured' by the U.S. Army, and was moved to the city of Heidelberg, not by chance the headquarter of the U.S. army in Europe. Nowadays, the ARI is a research institute of the State ('Land') of Baden-W"urttemberg. Already in Berlin, the ARI was closely linked to the Berlin University. Now it is strongly connected with the University of Heidelberg.

The main scientific work of the ARI concerns at present the fields of astrometry, of stellar dynamics, and of astronomical bibliography. In astrometry, the ARI has issued over a century a long series of catalogues of fundamental stars (in 1999: FK6). It was strongly involved in the ESA Space Astrometry Mission HIPPARCOS, and is now involved in the planning of future astrometry satellites like DIVA and GAIA. In stellar dynamics, numerical N-body simulations of star cluster have a long tradition at the ARI. The ARI is engaged in the production and evaluation of catalogues of nearby stars, and carries out a wide range of studies on the structure, kinematics, and dynamics of the Milky Way and of external galaxies.

So as you see the ARI has a rich and colourful history, and it is a pleasure for us to work at such a historic place. On the occasion of its anniversary this year the institute was host for many of the leading stellar dynamicists of the world in the conference star2000, Dynamics of Star Clusters and The Milky Way (Proceedings in ASP Series will be published). Not the least to mention that Heidelberg is a nice and tourist attraction with its castle and old city, it is also a successful centre of German astrophysics, with four other institutes working on astrophysical topics (MPIA, LSW, ITA, MPIK).

Rainer Spurzem

THE LEONID STORM FROM RADIO OBSERVATIONS AT MADEIRA

Madeira is a sunny and warm, semi tropical island of the Atlantic ocean, with clear skies almost all year. The night of the 17th, early morning of the 18th November '99, the optical observations of the expected Leonid storm, organized by the group of Astronomy of the University of Madeira, failed due to wind, fog and rain! The worse than ever weather conditions, however, did not stop the 17 observers (2 radio astronomers and 15 enthusiastic madeirans) from observing the Leonids, using elementary radio astronomy: Parking our cars roughly perpendicular to the direction of the Leo-radiant, and tuning our radios to noise channels, far from frequencies of local stations, we have counted Leonid 'bursts' heard on the radio. These bursts were picking up from the noise and they were not spurious emissions of the kind described in Sky Telescope, Dec 97, 108. They were the result of the reflections of the waves of distant radio stations from the Canary Islands, some 700 km south from Madeira, onto the ionized trails of the Leonid meteors.

The 'radio' observations started at 21:00 UT and finished at about 4:00 UT. We have detected an average count rate of less than 12 met/hr. There was a jump of 20 met/hr around 1:00 UT followed by a 'radio storm' for over 30 minutes around 2:00 UT, with average count rate 90 met/hr. Our radio and the later announced optical peaks occured at almost the same time! After 2:30 UT the rate dropped to 12 met/hr. During these observations 'radio' fireballs were also detected!

The undoubtful public success of these observations, urge us to organise similar ones in the future.

Nectaria Gizani & Pedro Augusto

TRANSITION

HERMAN ALEXANDER BRÜCK CBE

Hermann Alexander Brück was one of the shapers of modern British astronomy. He retired in 1975 from the triple post of Director of the Royal Observatory Edinburgh, Regius Professor of Astronomy and Astronomer Royal for Scotland. Under his guidance the Royal Observatory Edinburgh had become one of the premier centres of astronomical instrumentation world-wide and the Department of Astronomy a pioneer of undergraduate teaching in astrophysics.

He died on March 4th 2000, in his ninety-fifth year and with a mind still sharp.

A golden and ultimately dramatic youth and young manhood in Germany was followed, via the Vatican Observatory, by rebirth of his career in England where he became a senior astronomer at Cambridge. He moved

again to re-create astronomy in Ireland, and lastly to Scotland where he put the Royal Observatory Edinburgh in a position from which it has never looked back.

Hermann Brück was an only child, born in 1905 in Berlin to a Prussian military family. His father was killed in action in the first battle of Lodz in 1914, and his mother brought him up in interesting times. Astronomy possessed him young – the seed was Littrow's "Wunder des Himmels" as entertainment for a temporarily invalided child – and after a thorough grounding in the classics, in which the school specialised, and in mathematics and physics at the Kaiserin Augusta Gymnasium in Berlin-Charlottenburg, he matriculated at Kiel University in 1924. (He was deeply fond of the classics, and a few months before his death had acquired a Greek grammar to brush up his ancient Greek!). His mother had wanted him to pursue a more sensible career than astronomy, but fortunately a combination of his own innate ability and sympathetic and eminent academic relatives prevailed. He moved to Munich, and then to Bonn, and back to Munich, living with the family of his uncle, Professor Kisskalt, who had brokered his start in astronomy. At Munich he attended lecture courses by such as Wien, Caratheodory, and Emden, and there he fell under the spell of Arnold Sommerfeld, who supervised his PhD studies; and in 1928 he graduated with a PhD examined by a galaxy of the greatest physicists of his time. It had not been all work; the young athlete had also enjoyed fencing, skiing and rock-climbing.

Professional life started at the Potsdam Astrophysical Observatory, working at the cutting edge of spectroscopy amongst the great men who were creating this new science. There also he joined the physics colloquium which included von Laue, Grotrian and Einstein. Life at this time was intellectually intense and elegantly idyllic. However the tide began to turn as the Nazi sympathies of some colleagues, and the increasing policing of thought, signaled the end of his search for truth in Germany. Abandoning it all in 1936, he arrived at the centre of his spiritual home, the Vatican, where he was provided with the wherewithal for survival, and where he committed himself to the Roman Catholic faith. Brück gambled everything on a future in Britain, and arrived destitute.

This was the start of his second career - in Cambridge, where under Eddington he gained his second PhD and a career that took him to assistant directorship of the Observatories. That could have been a life's work; instead, he accepted the invitation by the Eamon De Valera to join the Dublin Institute of Advanced Studies, where Schrödinger and Heitler had moved from Germany, to bring new life to Irish astronomy. He moved in 1947 to the moribund Dunsink Observatory outside Dublin, and transformed it into a centre of modern observational technique and the focus of a vigorous and widely appreciated astronomy programme, with close contacts – and a shared observational project in South Africa – with the Armagh Observatory in Northern Ireland. Such was the impact of these innovations that the International Astronomical Union held their triennial Assembly in Dublin in 1955.

He stepped from the accomplishment of that task to do the same for Scottish astronomy in 1957. Edinburgh was his magnum opus. Raising the Royal Observatory from a provincial operation to an internationally-ranked research centre required the determination and vision that were his hallmarks. He collected at Edinburgh a team of astronomers and engineers with the skills he required for creation of new automated instrumentation for scanning spectra, for measuring star and galaxy images, and for operating telescopes remotely. These developments were the vanguard of what was to follow worldwide.

On his retirement in 1975 he and his colleague and wife Maire launched into historical studies of nineteenth century astronomy. This has led to the definitive work on the life of Piazzi Smyth, 'The Peripatetic Astronomer', as well as a history of Edinburgh Astronomy. Throughout his busy career he served the Roman catholic church as member of the Pontifical Academy of Sciences, and was proud and delighted when at age 90 he was made Knight Grand Cross of St Gregory the Great, the highest possible distinction.

Despite his personal drive and the success it brought, and despite his awe-inspiring and elegant presence, he was a modest and gentle man, seen to best effect in the heart of his family.

I am a beneficiary of these Edinburgh days, when automation and the computer were being brought to bear on science by a visionary whose natural tool was the fountain pen. He loved his University role – typically he became Dean of the Faculty of Science – and fostered student involvement. I recollect with nostalgia dazzling afternoons on the lawn behind their house when he and his wife (also a University teacher) entertained first year students, he by recounting exploits with Heisenberg and Schrödinger and Einstein, she acting as a skilful foil, sometimes gently teasing the Great Man. They were a wonderful team.

Peter Brand

Note of the editor : I happened to start my PhD in Edinburgh University while Hermann Brück was still Professor (I consider this a great luck !). I did experience the atmosphere well described by Peter Brand. I will not forget that his idea of a PhD was quite different than that developed later in many Institutes. He was saying that within the educational program of a PhD one has to learn not only about science and research but all administration a professional has to face to accomplish all this. We were taught that our contribution for infrastructure was a virtue besides research.

ANNOUNCEMENTS

ASTROVIRTEL programme

On behalf of ESA and ESO, we are glad to be able to announce the opening of the ASTROVIRTEL Programme.

ASTROVIRTEL is an initiative financed by the European Commission under the scheme "Enhanced Access to Large Infrastructures" of the 5th Framework Plan and it is operated by the ST-ECF and ESO/DMD.

The aim of ASTROVIRTEL is to give the opportunity to selected groups of European scientists (from EC Member and Associated States [for a list of these states, see http://www.stecf.org/astrovirtel/EUStates.html]) to access and use the ESO/ST-ECF Archive (which currently contains data obtained with the ESA/NASA HST, with the ESO NTT, VLT and with the Wide Field Imager on the ESO/MPI 2.2m Telescope) as if it would be a "virtual" Telescope.

A description of the ASTROVIRTEL Programme, together with the details of the first Call for Proposals, can be found at http://www.stecf.org/astrovirtel.

The deadline for the first Call was June 15th, 2000 but this is just the start. Do not hesitate to contact us if you need further information. The ASTROVIRTEL email address is astrovirtel@eso.org.

Piero Benvenuti (Head/ST-ECF) & Peter Quinn (Head/DMD)

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european VLBI network

The European VLBI Network (EVN) is an array of sensitive radio telescopes located across Europe, that carries out co-ordinated observations of cosmic radio sources. The network was established by a consortium of radio observatories who operate the individual telescopes and are members of the European Consortium for VLBI. Data from the telescopes are correlated in a central processor at the Joint Institute for VLBI in Europe (JIVE), forming an interferometer network with milliarcsecond resolution and high sensitivity. The EVN often co-observes with the UK MERLIN array and the US Very Long Baseline Array (VLBA).

Access to the EVN is open to all professional astronomers around the world and observing proposals are judged on their scientific merit by the EVN Programme Committee. A Call for Proposals is announced three times per year (see www.mpifr-bonn.mpg.de/EVN/EVNcall). For further information about the EVN see www.jive.nl/jive/evn/evn.html.

The European VLBI Network (via JIVE) has received an award from the European Commission's Access to Research Infrastructures Programme (an action of the EC's Improving Human Potential Programme). The award is designed to facilitate the use of the EVN by users who are not affiliated to the Consortium institutes, and may not have the support of colleagues who are experienced in the planning, execution and analysis of VLBI observations. The contract will run for a period of 3 years and is designed to support access to the EVN for External Research Groups that are led by Principal Investigators (PIs) who are not affiliated to an EVN institute. In particular,

(a) the Principal Investigator (PI or Research Group leader) shall not be affiliated to: Max Planck Institute for Radio Astronomy (DE), Netherlands Foundation for Research in Astronomy (NL), Jodrell Bank Observatory (UK), Onsala Space Observatory (SE), Institute for Radio Astronomy (IT), National Astronomical Observatory (ES), Metsahovi Radio Observatory (FI), Torun Center for Astronomy (PL), Bundesamt fuer Kartographie und Geodaesie (DE), Paris Observatory (FR), Joint Institute for VLBI in Europe (NL).

(b) the PI will be affiliated to an Institute located within the EU or the recently enlarged Associated States*.

All co-investigators of Research Groups for which the PI satisfies points (a) and (b) - irrespective of the co-I's nationality and affiliation - stand to benefit (provided they are not affiliated to an EVN institute). Thus Co-Is affiliated to institutes outside of the EU states may also benefit from this programme.

The support provided by this programme includes: (i) absentee processing of the data at JIVE, (ii) assistance

from EVN Support Scientists located at JIVE - project planning, scheduling and data analysis and (iii) full financial support for users of a research team who wish to visit JIVE or the EVN observatories in order to observe or process EVN only, EVN-MERLIN and Global VLBI data.

EVN users must first obtain observing time on the EVN before they are eligible for this support. To apply for time on the EVN please refer to the EVN Call for Proposals, further information can also be obtained via the PC chairman, Simon Garrington (stg@jb.man.ac.uk). For more information on the EVN's EC ARI programme please contact Mike Garrett (garrett@jive.nl)

* the associated states now include: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Iceland, Liechtenstein, Norway, Israel. Switzerland under negotiation.

Mike Garrett

VISITING FELLOWSHIPS FOR POSTGRADUATE STUDENTS

The European Association for Research in Astronomy (EARA) has been designated by the EU as a joint Marie Curie Training Site, offering fellowships for postgraduate students working in the following theoretical or observational areas: solar physics; formation, structure and evolution of stars; formation and evolution of galaxies; cosmology. We invite applications for the first year of the Fellowships, with approval subject to formal contract signature, expected by late June 2000.

About 10-12 fellows per year are foreseen over the four year duration of the program. The expected total of 90 fellowship-months per year, will be shared approximately equally between the five EARA institutes :

- the Institute of Astronomy in Cambridge,
- the Sterrewacht (Leiden Observatory) of Leiden University,
- the Institut d'Astrophysique de Paris,
- the Max Planck Institut fuer Astrophysik in Garching,
- the Instituto de Astrofisica de Canarias.

In order that the first fellows can begin in Autumn 2000-Winter 2001, we invite possible applicants to make preparations for answering the official call for application that we will issue immediately after the signature of the contract. Interested candidates should contact possible supervisors at the relevant EARA institute to discuss research projects that could be considered within the framework of such a fellowship. Applicants should be nationals of EU member (or associated) states. It is an EU requirement that fellowships cannot be held in a fellow's home country.

Selected candidates will spend 3 to 12 months at one of the EARA institutes during which they will continue their Ph.D research work under the supervision of local staff members.

Applicants for EARA Marie Curie fellowships should be ready to submit before a deadline still to be defined (probably late September 2000):

- A Curriculum Vitae with list of publications if any.
- A summary of the PhD project (not more than one page) with the name of their present PhD supervisor and the type of PhD fellowship they have at present.
- A research project to be conducted at EARA (not more than one page) with name of proposed EARA supervisor.
- The duration and dates requested for Marie Curie fellowship support.
- A letter of support from their present PhD supervisor, confirming in particular how the project at the EARA site is included in the PhD project.
- A letter of support from the proposed EARA supervisor.

The call for applications for fellowships at the EARASTARGAL training site will be posted on the EARA web site

(http://www.iap.fr/eara/EARA.html) hopefully by the end of June 2000, and it will be in parallel widely distributed amongst the European astronomical community.

More information can be obtained from the co-ordinator (R. MOCHKOVITCH) of the EARASTARGAL Training Site or from the other local co-ordinators

- Dr. Robert MOCHKOVITCH (mochko@iap.fr) at IAP Paris Tel: 33-1 44328187 Fax: 33-1 44328001
- Prof. Gerard GILMORE (gil@ast.cam.ac.uk) at IoA Cambridge
- Prof. George MILEY (miley@strw.leidenuniv.nl) at Leiden Observatory
- Prof. Simon WHITE (swhite@mpa-garching.mpg.de) at MPA Garching
- Prof. Fernando MORENO-INSERTIS (fmi@ll.iac.es) at Instituto de Astrofisica de Canarias

Robert Mochkovitch

FUTURE MEETINGS

VARIABLE STARS - 2001

International conference "Variable Stars - 2001" August 20-24, 2001, Odessa, Ukraine Preliminary topics: Interacting binary stars, Stellar magnetism, Pulsations- from seconds to years, Eruptive phenomena in stars, Stellar atmospheres, "Microlensing" variability.

Pre-registration deadline: December 31, 2000 Registration and abstract deadline: April 16, 2001 Official languages: Russian, Ukrainian, English

Organising committee: Valentin G. Karetnikov (Chairman), Ivan L. Andronov (Vice-Chairman), Vladislava I. Marsakova (Secretary). contact e-mail: astro@paco.odessa.ua, Web page: http://www.astro.od.ua

Ivan Andronov

ESO/ECF/STSCI WORKSHOP "DEEP FIELDS"

European Southern Observatory, Garching bei Munchen, Germany

Monday, 9 October - Thursday, 12 October, 2000

ESO Headquarters, Garching

On the web at
http://www.eso.org/gen-fac/meetings/hdfs2000/
In recent years technological advances have dramatically increased the power of looking deep into the Universe over wider and wider fields and wavelength domains. At the same time a detailed theoretical insight has been developed into the physical processes governing the formation and evolution of galactic structures as well as a remarkable capability of simulating existing and planned surveys.

The aim of the workshop is to create a focused debate on the astrophysical impact of the observations of DEEP FIELDS for the following general topics:

High-z Galaxies (Lyman-break, Ellipticals, EROs ...) Large Scale Structure Clusters of Galaxies AGNs Absorbers Deep Fields and Backgrounds Stellar and Substellar Objects

The workshop is meant to focus especially (but not exclusively!) on Deep Fields in the Southern Sky, following the observations of the Hubble Deep Field South, the beginning of the VLT operations, the planned deep X-ray observations of the "AXAF Field" with Chandra and XMM, as well as the many other deep fields observed in the far infrared and radio.

Scientific Organizing Committee

Appenzeller (MPIA), Beckwith (STScI), Boyle (AAO), Cristiani (ECF, co-chair), Dennefeld (IAP), Giacconi (AUI), Mendez (CTIO), Pettini (IOA), Puget (IAS), Renzini(ESO), Williams (STScI, co-chair)

Local Organizing Committee

S. Arnouts (ESO), P. Bristow (ESO), B. Sjoberg (ST-ECF), C. Stoffer (ESO)

Britt Sjoeberg

HISTORICAL DEVELOPMENT OF MODERN COSMOLOGY

The meeting will take place in Valencia (Spain) from the 18th to the 22nd of September 2000.

The Scientific Advisory Committee includes R. Dominguez-Tenreiro, B.J.T. Jones, V.J. Martinez (Chair), I. Novikov, P.J.E. Peebles, E. Salvador-Sole, J.L. Sanz, J. Silk, V. Trimble (co-Chair) and J.F. Valle.

The aim of this school is to review how our concept of the Universe has changed in the last century. In order to achieve this, lectures from cosmologists, astronomers, particle physicists, and historians of science will be included and we expect them to provide the students with the necessary introduction and to put theories into perspective, as well as indicating recent developments where appropriate, without giving too many technical details. Therefore, the school can be useful

for astronomers/cosmologists as well as for historians and philosophers of science.

Speakers include:Cosmologists, astronomers,physicists and historians of Science.

Full details are on the website:
http://www.uv.es/ martinez/school.html

Everybody interested in attending the school must fill a form that can be found in the web page and send it to the scientific secretary before July the 15th. A few scholarships covering full board and lodging will be granted and you should indicate in the form if you want to apply for one of them. About two weeks after the deadline the final decision on participation and scholarships will be communicated. Vicent Martinez, Director Observatorio Astronomico de la Universitat de Valencia E-46100 Burjassot. Valencia. Spain. e-mail: vicent.martinez@uv.es Tel: +34-963983070, Fax: +34-963983084

Vincent Martinez