European Astronomical Society

NEWSLETTER

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Contents

Message from the President

Clouds are gathering over European astronomy! ESO has been threatened recently with a drastic reduction of funding by its French partnership. Fortunately, after intense negotiations, a settlement has been found which limits the budget cut to 3.5 MDM. This reduction represents 2.4 of the total budget; it does not seem a great deal, but it comes after another one last year which, under the pressure of the German delegation, amounted to 4.2 MDM. Most agree that going any further in such budget reductions would have a serious impact on the completion and the instrumentation of the VLT.

It cannot be denied that the cold war provided a strong impetus for scientific competition and that astronomy benefited greatly from the exploration of space. Nowadays our governments have other priorities, such as fighting against unemployement, or improving the environment, and as citizens we can hardly blame them for that. But they indulge also in costly projects which, under the guise of scientific achievement, will contribute little to the progress of science. An example - it must have crossed your mind - is the Space Station.

We must seize any opportunity to explain our authorities that the construction of Europe goes beyond merging our national economies and using the same currency, that it does also imply the development of European cooperation in scientific research, including the Eastern countries. United, we are able to lead the competition, as illustrated by HIPPARCOS, ISO, SOHO, projects which were conceived and managed by ESA. We fare less well in astronomy from the ground, but the VLT will soon triple the optical collecting area of the member states and it will give them unequalled resolving power. Never would they reach this goal if they had not joined their forces within ESO. That is why it would be a serious mistake to weaken the international organisations which constitute our strength.

J-P. Zahn

Editorial

This issue of the Newsletter is dominated by the concern of astronomers on the policy of international cooperation and large facilities.The president's message gives a dramatic warning which should be an important issue during the next JENAM in Prague. F.Praderie in her two articles goes deep into the same subject and I think that contributions from other colleagues on this topic will be most welcome. News from the IAU, Observatories and projects are also important issues whereas the president of the Astronomical Society of Japan is presenting a comprehensive view on the history and role of the Japanese Astronomical Society. Our treasurer announces the decision of the EAS to support young astronomers for attending the JENAM 98.

I will finish this editorial with a brief review on the YOUNG-PEOPLE FORUM: It seems that young people were surprised and not well prepared to start such an interaction. As Santo Catalano wrote it seems that young people do have problems but it is a matter of attitude to discuss it with them in an open forum. Maybe this is a problem for all of us.

However what is impressive is that all happened during two days only, when the first set of hot problems appeared. Then about 12 senior astronomers who happened to be available during these particular days entered the discussion. Several young people were stimulated and this went on in a very enthousiastic atmosphere. About 80 young Europeans participated more or less actively and 40 Senior Astronomers from all over the world were available. We thank them all, most sincerely, and I hope this discussion will continue during JENAM 98.

The main discussed problems are: 1. Create a central data bank with information on research institutes and the people involved. 2. How grants are given from the EU. 3. How language problems affect mobility. For example people go more easily to English speaking places than anywhere else. 4. The role of recommendation letters. 5. The ratios of Phd/ Postdocs (US) permanent jobs. Should they be equal? Are we allowed to refuse compitent students because they might not find a job afterwards? 6. When is best to get a permanent job? Just after a PhD, or after a few post docs? 7. How referees of Journals or Telescope time allocation face young astronomers? All these questions and answers are found in detail at the young people WEB page of the EAS. Please have a look at it and send us your opinion. The address is: *www.astro.noa.gr/eas-forum/ypf-main.htm.*

M. Kontizas

Evolving politics of Scientific Collaboration

**From the IAU General Assembly,
Kyoto Joint Discussion no 9, Future Large Scale Facilites in Astronomy**

It is useful to distinguish **politics** = direction given to public action, and **policy** = objective, content of the action. Here, I am supposed to tell something on politics of scientific collaboration.

Giving views on politics of collaboration is a risky exercise: those views which I will present result from the appreciation of a panorama by a given person with some experience in international collaboration, views which you will accept or not. At least, they will hopefully nurture your reflection. In any case, I am not the Battelle Institute, namely I do not have a whole system of forecast at my disposal!

Moreover, politics of scientific collaboration comes to fruition thanks to the action of specialised bodies, such as the various governments and science funding agencies, but also the Carnegie group, the European Commission, ESO (European Southern Observatory) , ESA (European Space Agency), the OECD (Organisation for Economic Co-operation and Developement), APEC (Asian Pacific Economic Co-operation) etc., to quote international ones. These bodies which either define or guide politics are not always open, in the sense that their discussions are not always published. But for our subject they represent uncontrovertible references, inasmuch as we know their positions. Thus I will, if possible, refer to those positions.

The compelling role of these bodies does not prevent us, members of the scientific community, from directing our thoughts on what projects are most needed and on the best practices of collaboration to bring them to completion. This is what was done during this joint discussion. Such a discussion is one of the best ways by which we can really influence the mentioned bodies.

1. Need for and obstacles to collaboration in big science

1.1 Scientists and specially astronomers cannot escape collaborating:

To decide what are the scientific priorities requiring large facilities in the future, controversial debate must take place in internationally open circles. It is regrettable that facilities leading to cutting-edge results be decided in a context of "rapport de forces".

Large installations are more and more complex, we need extensive intellectual resources to properly define their performances and to run them successfully.

Large installations are more and more expensive, we need extensive financial resources from different countries to build up the necessary amount of funds.

Due to globalisation, exchanges of goods, persons, ideas, capital more and more flourish. The planet has become a more unified entity, the concept of collaboration is spreading as much (but may be more slowly ?) as that of competition.

1.2 However there are and remain many obstacles to scientific collaboration in big science:

structural (due to the structure of national governments and funding habits): funding and management of science are very different from one country to another, multi-annual budgetary commitments are not always authorised by law, transferring public funds to an external undertaking may raise difficulties, legal traditions are different, parliaments have different weights etc.

cultural: different cultures have different perceptions of the value and utility of science and large science investments.

diplomatic: co-operation in science is, in many industrialised countries, a part of foreign politics, which creates problems to scientists. The role of national prestige often hinders a willing attitude to co-operation.

economic: the arguments put forward by scientists to support their projects have to adapt to economic situations. At present, the public purse is tightened, and no more military justifications can be put forward. Moreover, and this may be a major trend for the future, the role of governments is flagging. Other interlocutors intervene in the science business.

All of us have experience of one or the other of these aspects and of the contradiction we are in: we know collaboration is vital, but we encounter barriers all along the path to set it up. The least amazing one is not the inclination of scientists to be sometimes more nationalist than their own government.

2. The recent general context of collaboration

I will focus my analysis on the period posterior to the end of the Cold War. This has been an extremely significant event for science politics, as many of the power balances established between the US and USSR were questioned. Independently new players appeared on the stage.

Due to the end of the East-West tension, during the 90s more emphasis was placed on economical rather than political constraints, and the traditional industrialised countries have reordered their policies mostly in function of their economic perspectives.

2.1 The most conspicuous observed elements.

The dominant model is now the liberal, open market one. For public business (remember that big science is still mostly public, with some exceptions in the US), this means: 1) reduction of public deficits, 2) downsizing the governments' responsibilities in economic life.

In 1993 there was a recession in most industrialised countries with as a consequence heavy cuts of all public spendings.

A new uninterrupted economic expansion has rapidly appeared in the USA, with a peculiarity in the public sector: a purely political goal has been set by the President, to bring the budget deficit to zero in 2002.

There is a slow start up in Japan, with a strong displayed will to boost basic public research . After a Basic Law was passed in 1995, the government budget for S &T increases by 9.9 % in 1997.

Persistent economic difficulties remain in Western Europe, Canada and maybe Australia

There are enormous difficulties in Russia, Ukraine, Armenia... while a promising reorganisation is taking place in Poland, Hungary, Czech Republic.

We are facing a vast rise in the influence and wealth of the "new" Asian countries, which are eager to become scientific powers: Korea increases its R&D expenditures by 15 to 20% a year, China by 14%, while the government in Taiwan increases by 10% in 1997.

2.2 Trends in R & D expenditures.

The Table and figures help us to understand the budgetary constraints to any policy.

shift to civil expenditures at the expense of military budgets, except in Japan (Table 1)

evolution of the public budget, civil and military (Figs 1 and 2): both have been decreasing since around 1990, except in Japan.

rise of the private component R&D funding at least in US and UK, the reverse trend being true in Japan . The forecast is that this trend will continue in the US.

in Russia where science had developed in the shadow of a massive military effort, R&D has fallen to 0.4 - 0.5% of the Gross National Product.

The evolution we are watching today belongs to the restructuring of science policy in the post Cold War era. In particular, due to the shift away from military research (except in Japan), the theme: "research to support national security", which was familiar in US official statements, is looking for new definitions. The needs of research for defence are reappraised. Hence the question: As the military funding decreases, what shall drive R&D growth? US replies: big business.

3. Collaboration in big science in the 90s

Let us distinguish two periods for science collaboration in this post-Berlin wall time.

3.1 1990-1992

A burst of enthusiasm arose for international collaboration. It was recognised that the East-West competition had led to a waste of efforts and money, and to many useless duplications. As a consequence, new major events took place:

The US decides to enter more frankly into the game of collaboration. The Gemini telescopes are a sign of this good-will policy.

Japan wants to learn collaboration and becomes very active on the international scene.

Both US and Japan show interest for the way European countries have managed to establish their large facilities in collaboration without hegemony of any country and with success.

Global projects are launched or consolidated: they are gigaprojects rather than megaprojects (ITER (International Thermonuclear Experimental Reactor), Space Station in which the US drags Russia)

Longer term enterprises of a global nature include return to the Moon, Mars conquest, scientific exploration and use of Antarctica. Co-ordination groups are established by the space agencies to guide the two first efforts.

Governments of the industrialised countries decide to create the Megascience Forum first as a clearing house with the view of later co-ordinating their actions.

3.2 After 1993

Things become more difficult, the co-operation spirit slowly becomes eroded:

Particle physics does not easily succeed to agree on a single project. The SSC (Superconducting Super Collider) is abandoned (1993). However Europe decides the LHC (Large Hadron Collider) , the only solid big science decision in the whole period. Later Russia, Japan and the US joined, making the LHC de facto a world project.

After the LHC decision, European countries start to decrease their support to large installations . ESA science budget is levelled in current money, CERN (European Particle Physics Laboratory), ESO and other organisations have decreasing budgets thanks mainly to action from Germany and the UK (France to a lesser degree). One of the reasons of this attitude is the desire to serve first, with restricted budgets, national facilities rather than co-operative ventures: countries keep to themselves. Another possible reason is a lack of synergy of these organisations' strategy with some Member countries' policies.

Russia disappears progressively from the stage, in spite of huge efforts to keep the space programme with the head above water (Space Station but also Spectrum X, Radioastron etc.)

Besides the Space Station, interest for space decreases with the end of the Cold War in the older space powers (NASA budgets level off, ESA's shrink, see above, Russia's decrease drastically, only Japan maintains its space budget). India, Brazil, China gear up their commitments. As a result for NASA and ESA, the new projects are more severely assessed, and some good emerges (we will see also the drawbacks): the slogan "faster, cheaper, smaller" brings some success to NASA.

The East Asian field develops its facilities (SPring-8 in Japan, Heifei synchrotron in China, etc.)

South Africa emerges with a project for a 10 m telescope.

3.3 Can we say that in this post Cold War period new models of collaboration have appeared?
I would say : not yet.

The enthusiasm for global projects which existed in the years 1990-92 has cooled off. A witness of this is the fact that Japan alone is conducting the first phases of a return to the Moon programme, the US and Japan fly independently to Mars after the disaster of the Mars-96 Russian mission. ITER will likely be delayed.

Table 1:

Country/ year	1990	1991	1992	1993	1994	1995	1996
United States	63781 .374	63663 .403	64514 .414	64647 .410	61933 .447	60846 .459	59874 .453
Japan	9836 .946	10089 .943	10468 .941	11041 .939	11458 .940	12206 .938	13062 .938
Germany	12030 .865	13469 .890	13489 .900	13106 .915	12618 .914	12627 .909	NA
France	13968 .600	13632 .639	12892 .643	12503 .667	12300 .669	11587 .697	11491 .710
United Kingdom	8191 .563	7832 .561	7556 .593	7806 .580	7377 .611	7604 .592	NA

1st line: Total government budget appropriations for R & D (civilian and military) in real terms and in millions US 1990 $ (PPP: Purchasing Power Parities)

2nd line: Civil budget for R & D as a percentange of total government budget appropriations.

Source: OECD, STIU Data Base, June 1997

In Europe, where the concept and practice of collaboration are well agreed upon, **the model** of European organisations, typical of post World War II expansion, **is questioned by governments**. When these organisations were established, one was building peace as much as science, there were funds at hand, and above all success has come. It is unlikely that one would build today other CERNs or ESOs. But those organisations remain strong foundations and bright assets for the relevant disciplines. European astronomers should realise this, and strive for a recognised role of ESO and ESA, as particle physicists do for CERN. Meanwhile all European co-operative organisations face the same problems: 1) should the access to their facilities be open without restriction except merit, 2) should the status of the personnel remain as advantageous as it is?

Not much interest, alas, has been paid to large existing facilities in Russia, except in space research. Those facilities could in some cases have continued to be productive with a fairly small amount of operating funds brought from outside. This is an obvious failure of the spirit of co-operation.

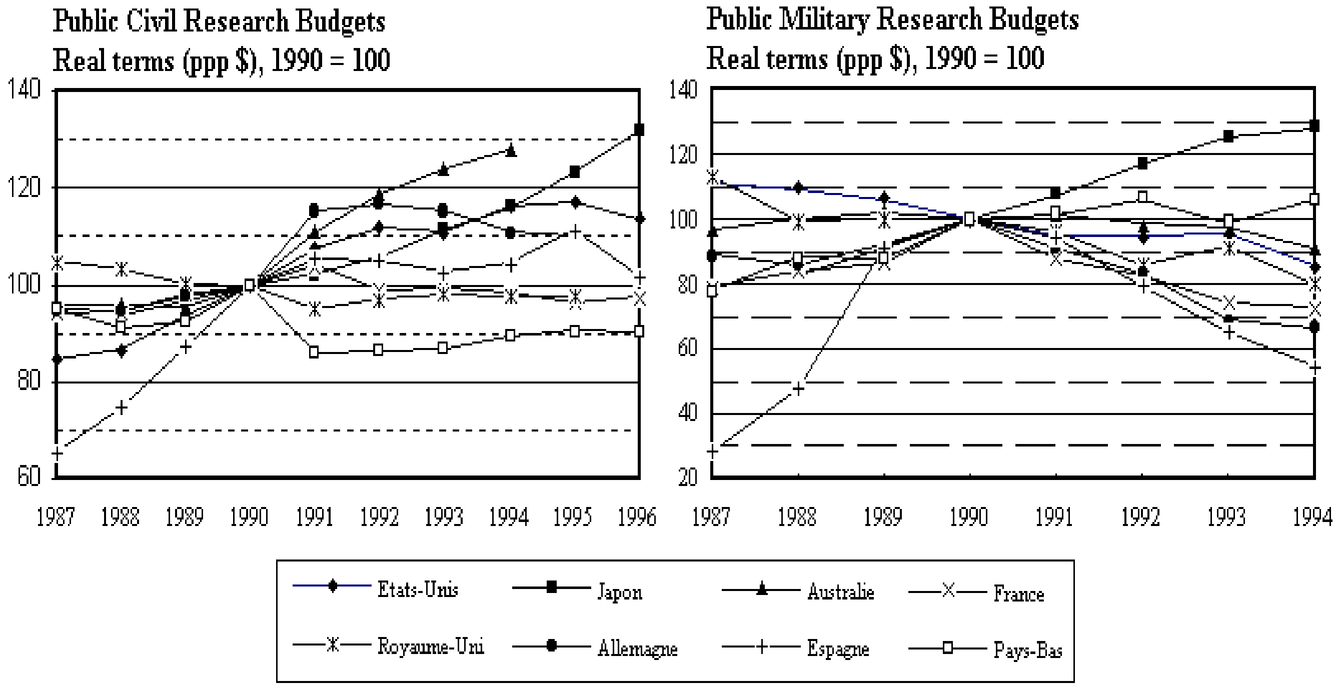
If no new models of co-operation have yet come to view, one should not stop thinking of the legal arrangements to be promoted for the time when future regional or global projects will develop. This time will one day or another occur, maybe not so far .

4. Main trends which might shape scientific collaboration

Re-emphasising the two major events of the last period (end the Cold War, rise of East Asian power), one can claim that the resulting consequences for science collaboration have not yet been drawn up. As a modest contribution, I will examine in turn each of the three big regions, a general survey which may inspire scientists on how to take advantage of the recomposition or redirection of forces.

In the US, the federal research budgets, after agreement between Administration and Congress, are announced to decrease by 17 to 20% up to 2002. But this is by no means a catastrophe, seen from a European point of view. The US are wealthy and will as soon as they can take up any leadership again (which is not lost in most fields, except particle physics). However the slogan imposed on NASA and the successes of the Clementine mission to the Moon and of Mars Pathfinder raise serious questions to potential partners: **1)** will the US collaborate in the future, as small missions do not lend themselves easily to collaboration ? **2)** do the US really need partners (except for the Space Station) ?

In Western Europe, after a superb 40 years period of science facilities construction through variable co-



Source: OECD, STIU Data Base, June 1997

Figure 1: and Figure 2

operation models, one sees:

a weakening of the spirit of co-operation. This can be observed for instance in the lack of momentum of European astronomers to focus their efforts and build a common strategic plan which would reinforce their position with respect to governments.

a rise of European regional interests, witnessing the existing local dynamisms (the Munich neutron reactor, the project of "Habsbourg" neutron source, the Catalan synchrotron etc.) but which can hamper joint efforts for larger, forefront installations.

a revised and maybe poor **appreciation by the governments** of the quality of large common installations, with the sole motive that the responsible organisations are too costly (ESO, CERN, ESA but also ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (Institut de Radio-Astronomie Millimetrique) etc.). We can understand that ESA cannot reorient its projects as fast as NASA did, since it brings together and depends on 14 different countries.

the will to shorten the path between basic research and innovation, an otherwise pertinent scheme proposed by the European Commission in the context of globalisation, but which does not easily accommodate long term projects (as are by nature big science projects).

In East Asia, the situation is very much in evolution. China has adopted a plan for State big science projects in which astronomy holds a good position (e.g. the LAMOST reflecting Schmidt telescope). Japan has voted a new Basic Plan for Science and Technology but public deficits which also rage there may delay big projects, even ITER, to which Japan is devoted more than other partners. Co-operation is a vigorously seized by APEC. Through this organisation efforts of information exchange among the most scientifically involved countries (including China, Japan, Korea, Australia) are promoted: a) a science information network is planned (APEC S&T Web), b) an inventory of existing facilities is being made, led by Japan, with the goal to possibly share the use of these facilities . Common projects are also developing, like the Asian-Pacific radio network, like the VLBI (Very Long Baseline Interferometer) global network (with strong Japanese involvement). Nationalist positions coexist in East Asia with the desire of opening, in particular in Japan. There the space programme is open to foreign participation and also facilities such as the synchrotron source SPring-8, international initiatives are taken such as Human Frontiers and programmes involving developing countries. One is likely to assist in Asia to the birth of a regional co-operation system which might reproduce to some extent, and with due recognition of local specificities, the European one.

5. Suggestions for astronomy

How could IAU be more involved in the preparation of the future of ground- and space-based large astronomy projects? The fact that a Working Group on large facilities was created during the Hague General Assembly (1994) and that this joint discussion was scheduled during the Kyoto General Assembly are in my view very positive signs per se.

I will dare to make a few proposals, based upon my experience of the OECD Megascience Forum and my own reflection more particularly on the way particle physicists manage their future. It is not vain to look at particle physics, since astronomy and particle physics are the two most basic science disciplines, since they both depend a lot on public budgets and have thus become fragile because of that very reason.

It seems essential that foresight on the future of the discipline and prevision of the next generation of instruments be conducted not only at the national level but also as much as possible at large regional level. For instance at the level of Europe for European astronomers, at the level of APEC for Asia Pacific ones etc.

No need to develop why foresight is important: astronomers just as particle physicists are accountable of the scientific choices made for future projects; the latter must be first debated among specialists, but then they must resist confrontation with alternative projects within the same discipline or outside; in a later phase they must also be explainable to the public.

The IAU could be the place where these large regional foresight exercises could be brought together and discussed among specialists in a world context. The goal being triple: probe again the resistance of a given project to criticism, ensure that the future of each major subdiscipline is well taken into account and that new fields can develop.

From scientific foresight exercises should emerge strategic plans establishing priorities for instruments to be built next, either at large regional level or at the world one, and developing the technical characteristics of these instruments.

R&D needed for future instruments should be conducted inasmuch as possible in collaboration, to minimise expenses and bring up the best solutions at hand. Particle physicists already do all that, and IUPAP(International Union for Pure and Applied Physics) is committed in the process.

To conclude, it seems to me that astronomers will defend costly astronomical projects in front of society and governments not only on the basis of their intrinsic value, of their industrial spillovers or of their cultural and educational aspects, all being yet essential and capable of resonance in the public. For effectiveness they should also defend them by showing that they are exemplary in the long term vision, planning and management of these projects. In this respect, the recent agreement reached by the US and European radioastronomers over the future millimetre array is a real step forward which should have many follow-ups for the benefit of our disciplines.

I am indebted to V. Lopez Bassols (OECD/DSTI) who kindly provided the data on which the graphs and table are based.

F. Praderie

Astronomy on the Antarctic Plateau

Why Astronomy in Antarctica?

The Antarctic Plateau offers the promise of the best site conditions on the surface of the Earth for a wide range of astronomical observations. This is a result of the unique combination of cold, dry and tenuous air that is only found there. The Plateau reaches an elevation of nearly 4,300m, has average winter-time temperatures of -60°C, dropping below -90°C at times, and has columns of precipitable water vapour which can fall below 100 μm. Winds are generally light, with the katabatic wind, originating on the highest parts of the Plateau, not reaching its full fury till near the coast. Weather conditions are stable, with minimal diurnal temperature fluctuations. This environment provides superlative conditions for measurement of the photon fluxes incident on the Earth from space, particularly in the near-infrared and sub-millimetre regimes.

In the near–IR, from 2.2 to 5 μm, the thermal emission from sky and telescope at the South Pole has been measured to be 20–100 times less than at Mauna Kea. From 2.27-2.45 μm there is also minimal airglow emission, so that the total background is minimal. It thus provides a window through which unprecedently deep observations can be made. In the mid–IR measurements show reductions of up to 20 in the background, a result of a reduced atmospheric emissivity in addition to the temperature drop, as well as exceptional stability in its DC level.

Measurements at the Pole show that for virtually the entire winter there is less than 300 μm ppt of water in the atmosphere. This extremely low level opens up the submillimetre windows, only partly accessible from even a fine site like Mauna Kea, for virtually continuous viewing. No other ground based site can achieve such a window on space. Existing atmospheric windows will be cleaner, the mid–IR windows extended longward towards 50 μm, and even a window at 200 μm opened for viewing at times.

The stable atmospheric conditions, tenuous air and absence of jet streams combine to produce conditions of superb clarity, or 'super-seeing'. Mitigating against these positive attributes, however,is the presence of a strong inversion layer which occurs on the most stable days of winter, when the air temperature can rise by 10° in a few metres. This produces relatively poor ice-level seeing, $\sim 1.5''$. However it is produced almost entirely from the lowest ~ 100 m of the atmosphere; above this height there is virtually no contribution from the rest of the atmosphere. The seeing is thus of a quite different nature to that encountered at temperate latitudes, with a much larger isoplanatic angle and coherence time for the seeing cells. The depth of the inversion layer decreases with elevation on the Plateau, and on top of the ice Domes may be small enough that a telescope on a raised platform will be above it entirely.

Such are the conditions of the Antarctic Plateau. Their unique properties offer the potential for making the most sensitive observations, with the greatest clarity, over a wide wavelength range,that are possible from the Earth. Ultimately, a telescope borne upon an aerostat suspended above the tropopause (at only $\sim 4,000$ mabove the ice) could provide space-telescope image quality, with water columns similar to airborne observatories and negligible near–IR thermal background, all for a cost more akin to a large ground-based project than a space-based one. The scientific potential is immense. Such a grand design will not, however, be achieved lightly! Tremendous logistical and engineering hurdles need first to be overcome. In the remainder of this article I will describe some of the progress that is now being made towards these goals

Current Programmes

The US NSF has funded the Center for Astrophysical Research in Antarctica (CARA) to establish the first astronomical observatory at the Amundsen–Scott South Pole station. Building upon a series of isolated experiments, construction of the observatory is now well underway. Three major experiments have wintered over, an infrared camera (on the 60-cm SPIREX telescope), a sub-millimetre spectrometer (the 1.7-m AST/RO telescope), and a microwave background anisotropy experiment (COBRA). An extensive site-testing program has been conducted. This winter an L-band (3.8 μm) survey of the Large Magallenic Clouds will be conducted and a [CI] 610 μm survey of the southern Galactic plane continued. An interferometer to measure the CMBR on degree scales will be installed next year. There is considerable international involvement in these ventures, scientists from Australia, France, Germany and Italy also participating in the programs.

Three high energy astrophysics experiments are being run concurrently at the Pole. The largest of these, the AMANDA project, is using the ice as a pure absorber to search for muons created by the few rare interactions with neutrinos which entered the Earth near the North Pole! A three dimensional array of photomultiplier tubes, implanted in bore holes currently extending 1600 m beneath the ice, is recording the arrival times of photons in the Cerenkov cone created by the passage of the high energy muons through the ice. The SPASE cosmic ray air-shower array has been moved adjacent to AMANDA to co-ordinate their observations and help discriminate between upward and downward traveling muons. Finally, the GASP telescope is making use of the long winter light and constant zenith angle to look for Cerenkov radiation from gamma-ray interactions in the upper atmosphere.

Future Plans

These experiments will continue to grow during the next decade. In the near-term the NSF plan to refurbish and expand the South Pole station. The major near-term objectives are to upgrade the CMBR experiments, and to construct a 2.5-m near-infrared telescope and a 10-m sub-millimetre telescope. The latter two projects are still on the drawing board, and seek further international partners. The Pole will certainly be the principle focus of astronomical activities in Antarctica for the next few years.

In the long term, however, we do not believe the South Pole will provide the optimal site for astronomy. It is directly under the auroral circle, and thus suffers regularly from a bright optical background (albeit only in specific frequencies). It also experiences a steady katabatic wind of 5–10 m/s. Though low compared to many observatory sites it contributes to seeing degradation. The best observing sites are expected to lie at the high points of the Plateau, the 4,300 m Domes Argus (82S, 80E) and 3,200 m Circe (75S, 124E), where this wind is absent and the depth of the inversion layer thinner. Dome Circe is close to the centre of the auroral circle. Dome Argus is the highest point on the Plateau. The Russian base at Vostok (3,500 m) and Japanese base at Dome Fuji (3,800 m) may also provide suitable sites.

A joint French–Italian scientific station is under construction at Dome Circe, with first winter-over science experiments planned for 2001. Italy has plans to construct a 4-m class sub-millimetre telescope, a 1.5-m near–IR telescope and a 1-m class CMBR polarimeter at the facility.

Setting up a major observatory at a new station on the high Plateau is a tremendous logistical challenge. To this end a site-testing programme is now underway, being co-ordinated by JACARA, the Joint Australian Centre for Astrophysical Research in Antarctica. An 'AASTO' or 'Automated Astrophysical Site Testing Observatory' has been constructed. This is a mobile laboratory which can be deployed anywhere on the Plateau by a ski-equipped LC–130 aircraft. It is then left to run unattended for a year. The interior provides a warm enclosure to control and power a series of attached experiments, and a data acquisition system to store the data. The AASTO is deployed during the summer months and retrieved, with data, the following year. It provides a low cost means with which essential site data can be obtained rapidly and with minimal environmental impact. Currently the AASTO is being field-tested at the Pole, prior to deployment at Dome Circe in 2000, and Dome Argus after that.

The most ambitious plans for Antarctic observatories involve building the largest of astronomical facilities, currently under construction at several mid-latitude sites, at the best site obtainable on the Plateau. These include, for instance, 8-m class optical / IR telescopes and millimetre / sub-millimetre arrays. It will of course be many years before we have such facilities. One interesting project currently receiving much attention is the idea of suspending a telescope from an aerostat in the stratosphere. Here diffraction limited seeing would be obtained, with water vapour columns so low that virtually the entire infrared spectrum is accessible, in addition to all the other advantages of Antarctica. This possibility is made feasible by the low level of the tropopause in the polar regions and the low wind speeds above the Plateau.

It is clear that tremendous scientific potential exists for a new high Plateau facility, not just for astronomy but for many investigations in solar and terrestrial physics. The logistical demands of operating it demand an international effort to achieve it. The Antarctic astronomical community is interested in pursuing a dialogue with other scientists who perceive the benefit of a such a new facility for their disciplines in order to help make it a reality.

Further information on Antarctic astronomy can be obtained from the JACARA page of the web, on URL *http://newt.phys.unsw.edu.au/~mgb/jacara.html*.

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THEMIS

Introduction

THEMIS (Télescope Héliographique pour l'Etude du Magnétisme et des Instabilités Solaires) is a new generation French-Italian solar telescope, built by INSU-CNRS (France) and CNR (Italy). The main scientific goal for which it has been designed is the accurate determination of the vector magnetic field. This aim has led to specific requirements, namely high spatial resolution, accurate polarization measurements and simultaneous observations in several spectral lines. The first one is achieved thanks to the choice of the site, the quality of the optics, a sophisticated thermal control inside the dome and the building and a tip-tilt fast guiding mirror (Molodij, G., Rayrole, J. Madec, P.Y., Colson, F., 1996, AASS, 118, 1). The optical scheme of the telescope, is maintained axially symmetrical up to the polarization analyser, minimizing the instrumental polarization and allowing to fill the second condition. Finally, the use of an echelle spectrograph allows simultaneous observations of several lines in a wide spectral range.

In addition to the multi-lines Stokes polarimetry, THEMIS is fitted out with other capabilities:

⊙ Imaging spectroscopy by Multichannel Subtractive Double Pass Spectroscopy.

⊙ Very narrow-band imaging with an Universal Birefringent Filter followed by a Fabry-Pérot.

⊙ Fast full-disk magnetogram capability.

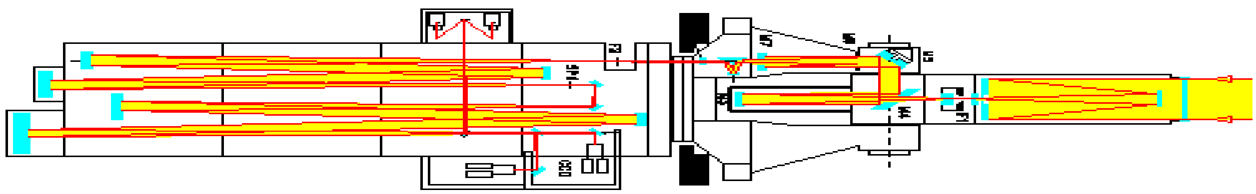

Figure 3: The optical scheme of THEMIS

Instrument characteristics

The site, the dome and the telescope

THEMIS is erected in El Observatorio del Teide, in the Canarian island of Tenerife. The elevation is 2400 m. The dome is 9 m diameter. A skull cap rotates around an axis at 45 degrees from vertical and holds an opening of about 1 meter diameter. A join between the telescope tube and the dome will prevent air exchanges between outside and inside the dome. THEMIS is a 90 cm diameter Ritchey-Chretien, alt-azimuthal, telescope, pointed directly to the sun. This, to have an axial symmetry of the optical beam up to the polarization analysis. This design minimizes the instrumental polarization. To avoid turbulences inside the telescope tube due to air heating, the tube is evacuated and closed by two windows. The entrance window is expected to be the dominant source of remaining instrumental polarization, as anisotropic stress in it would break the axial symmetry of the telescope.

The polarization analyser and the transfer optics

The polarization analyser is installed at the direct focus (F1) of the Ritchey-Chretien telescope. One will obtain successively the four Stokes parameters in less than one second by moving the quarter wave plates in three different orientations.The temperature of the quarter-wave plates has to be very precisely controled to keep the birefringence constant. To do this, the plates are immersed in oil, the temperature of which is stabilized (within 0.1^o C). The F1 focus is followed by a transfer optics which transports the beam to the spectrographs. It includes:

- The tip-tilt mirror M5 is driven by a granulation tracker to correct image motion. It is also used to scan the observed field on the entrance slit of the spectrograph (600 measures per second).
- A "small" Cassegrain telescope enlarging the image scale up to a focus ratio of f/66.7. The exit focus of the small telescope, F2, is accessible either for imagery or for spectroscopy. The field at this level is 4×4 arcminutes.
- A field rotator compensating for the rotation induced by the alt-azimuthal mount. It can be used to orientate the slit in any chosen direction on the sun.

Spectrographs and detectors

The two spectrographs are in a vertical, cylindrical tank hanging in the THEMIS internal tower. The tank is attached to the azimuthal mount of the telescope. The first spectrograph is a long predisperser (three different gratings can be exchanged automatically in this spectrograph: 79, 150 and 1200 grooves per mm). Masks can be installed in the plane of the intermediate focus (S1) at the exit of the first spectrograph, in order to select a number of spectral lines. The second spectrograph is an echelle one producing high dispersion spectra. It can be possible to observe simultaneously ten spectral regions, scattered in all the 450 nm to 850 nm spectral range. **The present detectors** are 20 Thomson CCDs cameras (288×384 pixels) to be used at the exit of the second spectrograph. Those cameras can be distributed on 10 spectral regions (two CCDs cameras are needed for each region, one for each of the two beams separated by the analyser). The highest presently possible resolution on the detectors is 0.12 arcsec × 0.6 pm per pixel.

Other observing modes

In addition to the multi-line polarimeter described above, we mention the main other observing modes presently available on THEMIS.

⊙ The Multichannel Subtractive Double Pass (MSDP)

- ⊙ The Universal Birefringent Filter and Fabry-Pérot
- ⊙ Full-disk magnetograms

Conclusion

THEMIS, which is the world largest evacuated solar telescope, is expected to be the front runner ground-based instrument for solar magnetic fields measurements in the coming years. This, thanks to its very modern concept, including minimized instrumental polarization, echelle spectrography designed for modern detectors and its high versatility, THEMIS is well fitted for coordinated campaigns with other ground based or space instruments.

C. Briand

Euroscience

An effort to better link science and society in Europe

A new, open, Europe-wide, multidisciplinary association was born in Strasbourg on 15th March 1997 at the constituent assembly of Euroscience, gathering about 150 people, among whom were founding members, scientific journalists, representatives of European scientific institutions (Academies, European Science Foundation, science funding agencies etc.) and of the European Commission. Twenty seven countries were represented. Some fifteen scientists from Eastern Europe were able to attend, bearing witness to the fact that, from the start, this association intends to contribute to the full integration of European science.

Why Euroscience, and why now? Euroscience founder members agreed on the fact that Europe lacks a forum where scientists from both industry and the public sector, and anyone else interested in science and technology, can express their concern for a healthy interaction between science and society, listen to those who question science, dialogue with decision makers at national and supranational levels, contribute to the creation of a truly European scientific space, and, more generally, analyse issues common to all disciplines in science and which they legitimately wish to discuss outside official institutions. The European situation differs from that of the United States where such an instrument, the American Association for the Advancement of Science, has existed in civil society for 150 years.The AAAS has played and goes on playing an important role in the influence wielded by American science. It groups 135000 individual members, 300 disciplinary learned societies, and it publishes the magazine Science.

The Euroscience association faces difficulties other than those of the AAAS. Europe is a vast ensemble, with more than 30 countries, and there are more full time scientists than in the United States. Europe also has a variety of cultures, of legal and political traditions. However scientists have long known that European integration is on the way, and they have experienced the benefit brought to their communities by large European institutions such as ESO (European Southern Observatory) and ESA (European Space Agency), CERN (the European Laboratory for Particle Physics), IRAM (the Institute for Millimetric Radio astronomy), ESRF (the European Synchrotron Radiation Facility) etc. These institutions were forged by a strong political will, and the quality of their achievements is recognized worldwide (if not by some national governments today...). How does an association go about enrolling individual members in such a broad context? This is the challenge that Euroscience has decided to take up, because problems concerning science and technology in Europe have so many common aspects that it is worth trying to formulate them more clearly and later come together to propose elements of a solution.

Which problems? They pertain to all sciences, not only to astronomy. The European Astronomical Society (EAS) has for long perceived them, witness the last EAS Newsletter (article by the past President Paul Murdin). For instance the future of young scientists is a serious preoccupation not only for the youth concerned, but also for their professors and for the public authorities who fund high quality training systems. Linking training institutions and industry in a better way would be of great service to the European scientific workforce. In this perspective Euroscience is involved in creating a European job bank and will associate the industrial sector to the venture.

Other problems include:
The elaboration of scientific policy: What part of public resources should be dedicated to basic research? Should not users of research be associated to some of the wide choices in research orientation?
The ethics of science: Should scientists not be more attentive to the internal and external rules, or proper practices, implicated in their activity?
The equal treatment of men and women in scientific and technological careers: Is there not progress to be made in a number of European countries?
The public awareness of science and what is now called "outreach": Should not professional scientists help citizens who feel anxious or seek advice by sharing with

them adequate information on the stakes of scientific development ?

For each of these topics, Euroscience has opened a Working Group where participants communicate by e-mail (see details and contacts on the Web server).

Euroscience has also initiated local sections, which may cross frontiers.The association's News Bulletin reports on these organizational efforts.

Of course, Euroscience is very young, whereas many national scientific societies and European learned societies, such as the EAS, have accumulated a lot of experience in relations between science and society in Europe. Euroscience intends to work in synergy with them. Besides these well established bodies, is there room for a fully European association that would promote science and technology ? Our answer is, Yes. Our professions produce invaluable wealth - intellectual, formative, economic spillovers - , yet they are not vocal about their problems, their interactions with society, or their views on the future of our societies (though scientists are trained to practice foresight in all they do!). Thus Euroscience's goal is to help secure a visible place in civil society for the community of people interested in the future of science and technology.

If you share these concerns and are interested in the construction by scientists of a larger European identity, please join us! An application form and more information can be found on the Euroscience server: <http://www.euroscience.org>

F. Praderie (Secretary General of Euroscience)

The Astronomical Society of Japan

The Astronomical Society of Japan was founded in 1908. It started as a society with a membership of about 700, which was consisted of amateurs and professional astronomers. The majority of the members were amateurs with academic members less than a quarter and professional astronomers even fewer. In fact, there were only three national universities which had a division of astronomy at that time. Therefore, the main activities of the society were not academic but just exchange of information and friendship among the members.

After the long national isolation of hundreds of years, Japan has opened the country to foreigners in Meiji-era, about a hundred years ago and the Governments urged modernization of the country by introducing Western cultures, technologies and sciences. This movement invoked great interests in science and astronomy among people and stimulated many amateur astronomers. This has rapidly increased the membership up to nearly 1000 till the outbreak of the world War II.

Japanese astronomy as a science was, however, developed slowly and in limited area, mostly learning from the Western countries. Astronomical observations were limited mostly in positional astronomy, solar and planetary sciences. The situation has been changed after the end of the World War II. The first big telescope, a 74 inches reflector was built in 1960, which greatly contributed for the initiation of astrophysical researches in Japan.

Starting with cosmic ray physics research, many physicists began to participate in astronomical researches and rapidly expanded research fields introducing new observational techniques. X-ray astronomy was started by balloon and rocket experiments, but later progresses by launching X-ray satellites regularly have made a great contribution to progresses in X-ray astronomy in world scale. The first detection of astronomical neutrino from the supernova in the LMC was made by the deep underground neutrino laboratory named Kamiokande in 1987. Radio astronomy, which originally began with solar observations, has evolved to the study of cosmic radio sources in millimeter wavelengths with a 45 m telescope and a six-element radio interferometer at the Nobeyama Radio Observatory. Just recently, the first space VLBI mission has successfully begun with the deployment of an 8 m antenna(HALCA) in space. In infrared astronomy, the first infrared satellite was launched in 1995 for observations of diffuse infrared emission. A large (8 m) optical/infrared telescope is under construction on Mauna Kea in Hawaii, expecting its First light in 1998. In the area of theoretical astronomy, an early interest in celestial mechanics has diversified into the fields of solar and stellar astrophysics, stellar and planetary evolution and recently cosmology as well. With the advantage of a highly developed country in computer technology, unique computer simulations of astronomical phenomena have been undertaken.

Amateur astronomy is also traditionally very active in Japan, many comets and novae are discovered every year by amateur astronomers. Recently, supernova hunting in extragalaxies are also made by some active amateurs. Many amateurs have 60 or 70 cm telescopes some of which are equipped with computer control driving system and modern instruments such as CCD cameras. There are more than 60 observatories spread over the country, which are built and operated by local cities or towns. Some of them have large telescopes with 100 or even 150 cm apertures. They are open to public people and used for education of school children or students, but also used for scientific observations by expert astronomers.

The total membership of the Society at present is about 3000, more than two thirds of which are amateurs. The membership journals "Tenmon Geppo" (Monthly report of Astronomy) are issued monthly and distributed to all members. Beside this public journal, a professional publication written in English "The Publication of Astronomical Society of Japan" is issued quarterly. This publication is distributed to non-amateurs and also subscribers of world wide. Two annual meetings of the Society are held in March and September every year and about 600 participants are enrolled and about 400 papers are reported either in oral or poster presentations. As is seen, Japanese astronomy has grown very rapidly after the World War II and now become one of the leading country in some fields of astronomy. However, the total number of the professional astronomers is still relatively small compared to many European and American countries; only three national universities have departments of astronomy(no change in the past 70 years!), although several other universities have astronomical groups in physics departments. Most observational works are exclusively undertaken by a single observatory (the National Astronomical Observatory) and a single space institute (the Institute of Space and Astronautical Science). Both are inter-university institutes and open to the utilization by other universities. In the past, we have had many successful projects by international collaborations, but mainly by US and European communities. We hope to extend the collaborations with many other countries including Asian and other areas in the future.

H. Okuda (the President of the Society)

Mykolayiv Astronomical Observatory

Mykolayiv Astronomical Observatory (MAO) is situated in the central part of the city of Mykolayiv (Ukraine) on a hill at 52 meters above the sea-level and about 30 kilometers from the Black Sea. Its geographical coordinates are 31^o 58' east longitude and +46^o 58' latitude. An astronomical museum, a scientific library and the adiministration offices, are housed in the main building of MAO. Six domes with different telescopes, several buildings for the scientific departments and an experimental workshop situated near the main building are all included in the area of the scientific campus.

The observatory was founded in 1821 as a naval one with primary aim to train navigators the astronomical methods of orientation and provide the Black Sea fleet with naval maps and exact chronometers. The first director of the MAO was C. Ch. Knorre who served for fifty years. Since its operation the observatory was also engaged in the research and compilation of star maps and catalogues and the determination of comet and planet coordinates.

Since 1912 to 1992 MAO became one of the southern stations of the wellknown Pulkovo Observatory. During this period, its main goal was to expand the Pulkovo absolute star catalogues to the southern sky up to -30^o of declination and to observe regularly the Sun and solar system bodies. For this purpose a transit instrument and a vertical circle were installed at MAO. Additionally, the research activities were extended to astrophotography and photometry with the 6" refractor.

In 1931 the high accuracy time service was founded at the observatory site to study time and frequency scale and its applications. Since 1957 the photoelectric transit instrument APM-10 (D=100mm,F=1000mm) was used for the determination of the earth's rotation parameters. For these tasks MAO was equipped with several frequency standards, short and long wavelength radioreceivers and accessories of time synchronisation.

In 1955 the meridian circle (D=150mm,F=2160mm) made by the well-known german firm "Repsold Brothers", was installed for the determination of differential coordinates of stars within the range of declination from +20^o to -30^o . During this period some star catalogues, were compiled such as the Bright Star Catalogue, the High Light Catalogue, Zodiac Stars Catalogue etc. In 1957-1969 artificial earth satellites were photographed for the study of their orbits.

Since 1961 regular photographic observations have started by means of a zone astrograph (D=120mm,F=2044mm, plate 5' x 5'). Mars, Jupiter and Saturn with their bright satellites, Uranus, Neptune and minor planets were observed for the determination of their exact coordinates. The collection of the photographic material was arranged in a special photographic plate library. About ten thousand astroplates at different observation epoches have been obtained.

MAO took part in many important international astrometric projects such as AGK3R, South Reference Stars, Catalogue of Faint Stars. The high accuracy of the MAO catalogues was recognised by introducing its data to the international FK series of fundamental catalogues, whereas others were added into the german catalogue ARIGFH (Astronomisches Rechen-Institut Geschichte des FixsternHimmels. In the last 80 years, about 0.5 million stellar observations were performed from which 30 different catalogues were derived. During the 70s, long term observations of the solar system bodies provided the necessary observational material for the USSR scientists to develop a new relativistic theory of the planets motion.

In 1974 MAO organized a three-year expedition to high geographical latitudes aiming to demonstrate the advantages of astrometrical observation during the polar night. At that location it was possible to observe stars continuously during 24 hours and with insignificant meteorological variations. The polar night observations were organised by MAO on the island West of Spitzbergen (Norway) with latitude of $+78^o$ for determination of accurate absolute coordinates of stars. The main part of the programme was carried out during long-time and non-stop observations from 18 to 155 hours! These observations were similar to the space ones. Many observations were obtained in two culminations for the reliable determination of the absolute orientation of the telescope. Finally, the polar absolute catalogue Nik(Spz)75 was compiled by G.M.Petrov with small systematic errors. Later, this catalogue was used for the improvement of the FK4 fundamental catalogue.

In the 80s MAO focused on the development and design of new automatic telescopes. In cooperation with the Pulkovo and Kazan observatories, developments were been made with the aim of designing two original meridian horizontal telescopes: MAHIS and AMC (Axial Meridian Circle). These instruments were designed to increase the limited accuracy of groundbased telescopes for the determination of star positions. They provided very high level of automation of all observational procedures: operating routines for telescope control, preparing input data, numerous observations of celestial bodies, data sampling and processing etc. Therefore, it was possible to determine the current parameters of the telescope, the anomalous refraction and so on. One of these telescopes C was completed in 1995 and includes the horizontal telescope (D=180mm, F=2480mm) in the prime vertical (fixed alignment) vacuum collimator (D=180mm,F=12360mm). The telescope is connected with a citall pentag objective and can rotate around its optical axis for stellar observations. The AMC is equipped with computer control system and CCD devices. The expected accuracy of the automatic AMC is about 0.02 arcsec considering the systematic errors. A coordinate-measuring machine for the the astrophotographic plates was also developed at MAO. The main purpose of this Programming Automatic Radial-Scanning coordinatometer (PARSeC) is the positional measurement and reduction of the star images photographed on the astroplates taken for the compilation of the astrographic catalogues. At present PARSeC has already been used for measuring different astroplates. More than 500 images can be measured per hour during non-stop operation up to 16 hours, with random error in the position of stars of 1.5 micron.

Since 1992, MAO has become an independent observatory belonging to the Ministry of Science Technology of Ukraine. Together with the ukrainian astronomers MAO continues to make the basic research in astronomy, especially in the field of positional astronomy. The observatory has about 70 employees; among them there are 22 scientists and 20 engineers/ technicians.

Like most observatories of the Former Soviet Union, MAO faces several problems in many fields of the observatory's life, mainly due to the lack of financial support. We try to diminish them by making strong efforts for receiving grants from ISF, ESO, some ukrainian funds , Renaissance etc. The Mykolayiv observatory developed scientific links with many astronomical institutions and organisations such as IAU, EAS, Ukrainian Astronomical Association, Astronomical Society (Moscow) and observatories from Europe, Asia, USA and FSU. This mutual collaboration and assistance is very important and fruitful for MAO.

For the last years the main areas of the MAO investigations are: CCD observations with meridian telescopes for linking the optical/radio reference frames; extention of the optical (Hipparchos) reference frame to faint stars. Since 1996 the observations of nearly 20 thousands stars in the fields around the 250 extragalactic radio sources for declination zone from $+90^o$ to -20^o and in the 12-14 magnitude range, have been started with the AMC. The positions of these second reference stars selected from the Guide Star Catalogue are provided to the Hipparchos system. It needs about three years for the compilation of a future catalogue with an accuracy of 0."02.

Furthermore, MAO continues the observations of the solar system bodies, especially the selected minor planets and asteroids with the RMC and the zone astrograph. We plan to reobserve some stars from the Hipparchos, Tycho and Guide Star Catalogues for improving the star coordinates and proper motions.

Finally, the Mykolayiv Astronomical Observatory shows promising perspectives for the development of modern astrometry.

G. Pinigin (Director of MAO)

Message from the treasurer

From the treasurer's point of view, 1997 was a good year for EAS, thanks to all our members who paid their dues on time. This has resulted in a small surplus in 1997 and a healthy reserve, which gives us the freedom to start taking some new initiatives, like a more attractive Newsletter layout.

Lately, **the EAS Council has decided to announce a number of travel grants for young astronomers to attend the JENAM-98 in Prague in September**. We hope that this will enable some more young astronomers to come to the meeting in Prague and to present their work (see the JENAM-98 second announcement).

Also, we will soon send the new EAS Directory to the printers. The Directory will include addresses of all the EAS members as well as astronomical institutes in European countries, where we have members.

We will soon send out membership renewal invoices for 1998 and hope that they will be paid promptly, as most of you have done for the last couple of years.

I would also like to recall our WWW home page (thanks to Michel Dennefeld) at: http://www.iap.fr/eas/ where information on how to become a member is available. We would welcome an increase in the membership, in particular young people of whom we still have a relatively small representation.

B. Nordstrom

News from the IAU

At the XIIIrd IAU General Assembly in Kyoto in August 1997 (see D. Sugimoto's report in the last EAS Newsletter), new Officers for the period 1997 - 2000 were elected as follows: President: Robert P. Kraft (USA), President-Elect: Franco Pacini (Italy), General Secretary: Johannes Andersen (Denmark), Assistant General Secretary: Hans Rickman (Sweden). New Vice-Presidents elected to the Executive Committee are: Catherine Cesarsky (France), Norio Kaifu (Japan), and Nikolai Kardashev (Russia), while Claudio Anguita (Chile), Bambang Hidayat (Indonesia), and Virginia Trimble (USA) will serve a second term on the EC.

At the Kyoto GA, the IAU welcomed as new Associate Members Bolivia and the Central American Assembly of Astronomers, as representing jointly the astronomers in Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. Moreover, the Executive Committee was authorised to approve an application by astronomers of the Macedonian Astronomical Society, when received from an appropriate body. On the negative side, unfortunately, the membership of Morocco had terminated at the end of 1996 by virtue of Article 7 in the IAU Statutes. Finally, an unprecedented 774 new Individual Members were admitted, bringing the total to 8,562 as of August 27, 1997.

The years just before and after a General Assembly are particularly busy for the IAU Secretariat in Paris. As readers who attended the Kyoto GA or read about it in the last Newsletter will know, it featured a very rich scientific programme as well as a large attendance of nearly 2,000 participants. The follow-up work of updating our membership files for nearly 800 new members, sending out individual letters of welcome, and verifying the correctness of the data has taken a large effort. At the same time, the bulk of the papers for the Highlights of Astronomy and Transactions volumes - over 2000 pages in all - was received; we are currently struggling to retrieve the exponential tail of that distribution so the books can be sent to the printer...

The increasing threat to astronomical observations at all wavelengths from activities in space and on the ground has reached a point where a major effort towards achieving some sort of international protective agreement has become necessary: The steadily increasing problems of ground-based light pollution are well known; remedies have been identified, but need to be advertised to the relevant authorities. Threats from space include, in the visible domain, increasing interference from illuminated space debris, and recently - and potentially far more damaging - proposals to place large, luminous, artificial objects in orbit for all sorts of commercial advertising purposes. Similarly, radio astronomers are facing an increasing onslaught on the narrow windows in frequency space allocated to the most important astrophysical spectral lines, primarily from the booming satellite telecommunications industry.

In recognition of the vital importance of these issues, the Kyoto GA passed a resolution (A1) directing the IAU to take steps aiming to ensure the protection of the night sky through international agreements. Contacts are being established with the appropriate United Nations organs to work towards this goal; not surprisingly, this process will take time, but reactions so far are encouraging, and plans are under way to make this a major issue at the UN conference UNISPACE III in Vienna in July 1999. I urge all astronomers to contribute to raise the awareness of these key environmental issues also with the authorities in their own countries - ultimately it will be our governments who will decide the fate of observational astronomy

On more practical matters, readers may have noticed that the IAU Web site has been moved to a new, permanent address: *http : //www.intastun.org/*. It may have been, also, noticed that the IAU Bulletin has been given a new design. As a next step, we will gradually work towards (initially partial) electronic distribution of the IB. A major bottleneck in this connection is that e-mail addresses in our files are unavailable or outdated for a large fraction of the membership; help from all members will be needed to get our file of electronic addresses into a shape where it can be used for routine distributions of information.

Finally, the Kyoto GA decided that the General Assembly will return to Europe next time: The XXIVth GA will take place in Manchester, UK, August 7-19, 2000. A first strategy meeting was held with our British colleagues already 12 days after the end of the Kyoto GA, and all signals are green for another memorable event in that famous year. We look forward to see you there!

J. Andersen (General Secretary, IAU)

The European VLBI Network

Support for EU astronomers via the TMR Programme

Very Long Baseline Interferometry (VLBI) allows the imaging in radio continuum and spectral line emission of astronomical objects on scales of 0.001' (1 millarcsecond) to 1". The European VLBI Network consists of an international Consortium of institutes in Europe and Asia which conducts regular VLBI observations either alone or in conjuction with other arrays: the Very Long Baseline Array (VLBA) in the USA and the MERLIN array located within the UK. Together these arrays form a very sensitive Global VLBI Network. In addition, the EVN conducts observations with the orbiting Japanese Space VLBI satellite, "HALCA", which allows even higher resolution radio images to be obtained.

The EVN encourages use of the Network by astronomers not specialised in the VLBI technique. The Joint Institute for VLBI in Europe (JIVE) can provide support for scheduling, correlation and data analysis of EVN projects, as well as information during proposal preparation.

In particular, proposers affiliated to non-EVN institutes within the European Union may take advantage of the EC's TMR programme "Access to Large-Scale Facilities". This provides travel and other financial support for PIs (and their co-Is) to visit JIVE or the EVN observatories for correlation or data analysis. Interested astronomers should contact Michael Garrett at JIVE (mag@jive.nfra.nl) for more details about this programme.

Further information about the EVN (including the full Call for Proposals) can be found at the EVN home page: *http : //www.nfra.nl/jive/evn/evn.html*

M. Garrett
