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TABLE DES MATIÈRES - CONTENTS

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New Phone and Faxnumbers URSI	1
In Memoriam	2
Peter J. Christiansen	2
Future General Assemblies	5
The XXIVth General Assembly	8
The Scientific Programme in Kyoto at the XXIVth General Assembly	8
Practical preparation of the attendance at the General Assembly	9
Young Scientists at the Kyoto General Assembly	9
URSI Young Scientists between General Assemblies	11
Should URSI Have Individual Members?	12
Profile of Member Committees	14
Israel	14
Nigeria	15
News from the Member Committees	18
Egypt	18
Israel	18

Reports on URSI-Sponsored Meetings	20
International Symposium on Middle Atmosphere Science, Kyoto	20
International Geoscience and Remote Sensing Symposium	21
A Decade of Advances in Radiowave Probing of the High Latitude Ionosphere and Atmosphere	22
Astronomy with Millimetre and Submillimetre Wave Interferometry	23
7èmes Journées Internationales de Nice sur les Antennes (JINA'92).....	24
International Symposium on Broadcasting in the Nineties	25
30th Meeting of the ICSU General Committee.....	27
Bi-isotropics'93 - a novel microwave materials workshop	31
Meeting announcements	32
Ninth Annual Review of Progress in Applied Computational Electromagnetics	32
Forthcoming URSI-sponsored meetings	33
Other meetings which have been brought to our attention	34
News from the ITU	36
The ITU restructured	36
Annual Report of IUWDS	38
Publications of the URSI Community	41
A Brief Report on the Status of the Review of Radio Science	41
Radioengineering	44
From the Archives of URSI	46
Personalia	54

NEW PHONE AND FAXNUMBERS URSI

Please note that *from 26 June 1993 onwards* our phone and fax numbers will change to the following

Tel.: (32) **9 - 264.33.20** (formerly (32) 91-64.33.20) (Mrs. I. Heleu)

(32) **9 - 264.33.21** (formerly (32) 91-64.33.21) (Secretary General)

Fax : (32) **9 - 264.35.93** (formerly (32) 91-64.35.93)

IN MEMORIAM

PETER J. CHRISTIANSEN

1941-1992

Dr. Peter J. Christiansen died at age 51 on the morning of July 30, 1992 from a heart attack. His death is a great loss not only to his colleagues, close friends and his family but also to the space plasma and radio community. Dr. Christiansen was born, brought up and educated in Australia as son of the famous Professor Christiansen, former President of URSI who strongly influenced the direction of his interests. Dr. Christiansen chose to become a plasma physicist working in the laboratory as an experimentalist as well as a theoretician.

He became well known when demonstrating in a laboratory plasma that electron beam driven upper hybrid waves may evolve into nonlinear structures forming cavitons which subsequently collapse and seem to emit radio radiation, work which he did in the United Kingdom at the University of Sussex.

This work arose out of an investigation of electron plasma waves, a field to which his interests were attracted steadily all over his life. Since its investigation is difficult as well experimentally as theoretically, he spent many years in this field but never lost the connection to radio wave propagation. So in investigating the properties of the electron cyclotron wave unstable plasma he made use of radio techniques for diagnosing the plasma state. This is when he found that the collapse of the cavitons may radiate obviously like little antennas and that the efficiency of this radiation was surprisingly high.

Following this laboratory research, Dr. Christiansen went to investigate electron cyclotron waves in space using spacecraft observation of GEOS.

His efforts resulted in a number of valuable contributions to the morphology of the electron cyclotron wave emissions in the dayside magnetosphere.

Since GEOS was one of the first satellites which measured the full background plasma parameters the addition

of the plasma wave observations provided basic insight into the excitation mechanism of these waves and in the state of stability of the

magnetospheric plasma. It was possible to determine the group velocities and wave numbers, modes of propagation and polarization.

From September 1981 until August 1984 Dr Christiansen was a member of the Max-Planck-Institute for Physics and Astrophysics, Institute for extraterrestrial Physics in Garching near Munich, Germany. Here Dr. Christiansen joined the Space Plasma Physics Group to work both on preparation of the AMPTE experiment and on space plasma theory.

As one of the leading scientists in the AMPTE mission he participated actively in the investigation of the plasma wave processes in the electron foreshock, bow shock, and magnetosheath region which are famous for the presence of multitudes of electron and ion beams as well as the emission of radio waves. Beams of electrons are also known to occur in the aurora during magnetospherically disturbed times. Their origin is well known to lie in the magnetospheric tail plasma distribution. But the mechanism of acceleration has not yet been settled. Dr Christiansen contributed to its clarification by joining the numerical efforts developing a model in which electrons could be accelerated to moderate auroral energies by generating parallel electric fields along a magnetic field line in a magnetic disturbance travelling along the magnetic field down to the ionosphere. The result was fascinating: when the velocity of the mover was fine tuned due to reflection, then the efficiency of energy conversion was about 50 percent.

As a follow up process, such electron beams generate radiation, providing the possibility of explaining part of the radiation in the auroral kilometric spectrum by these processes as well in the electron foreshock region which has been explored by spacecraft observations including AMPTE IRM and UKS in which Dr Christiansen was also involved. It has become recently clear that these processes do really work and have direct relevance for solar type II radio bursts.

Dr Christiansen, at the time of his tragic death, was the chair of the Geos S300 Consortium, the chair of the UK European Incoherent Scatter Radar Working Group (EISCAT) and a member of various other committees and panels. He was a co-investigator in many of the space missions of the next decade (for example Cluster, Tether and Mars 94). On his way to his last Cluster WEC meeting he 'dreamed -up' several new ideas for wave-particle correlations which he presented with customary enthusiasm at the meeting.

In addition to his scientific merits Dr Christiansen was a devoted and excellent teacher. His students admired him because of his rigor in scientific questions and friendliness in personal relations.

He encouraged and supported with great energy several under-privileged minorities in science. These included women (he was an early campaigner for WISE - Women into Science and Engineering), young people (as a teacher he enthused a generation of students at the University of Sussex) and, curiously for one who loved the bluegum trees (eucalyptus) trees of his native Australia so much, British University scientists. He will be widely missed by everybody who knew him including his students, his colleagues and his friends.

RUDOLF A TREUMANN
Max Planck Institut for Extraterrestrial Physics, Garching
LES J C WOOLLISCROFT
University of Sheffield, UK

FUTURE GENERAL ASSEMBLIES

The Standing Committee on Future General Assemblies is considering the organization of future General Assemblies, and requested the Secretariat to publish in this issue of the Bulletin the information reproduced below.

"At the URSI Board of Officers Meeting held in Brussels in April-May 1992, it was decided, given the long preparation time for an event of the importance of a G.A., that the choice of the venue for the URSI-G.A. in 1999 should be made in Kyoto on the occasion of the Kyoto G.A. in 1993, and hence the formal submissions for the 1996 G.A. and/or 1999 G.A. should be made by the Member Committees prior to the next Kyoto General Assembly.

It is suggested that those Member Committees interested in hosting the 1996 and/or 1999 G.A.s contact Professor T. Okoshi, Vice-President of URSI and Chairman of the Standing Committee on Future General Assemblies, before the end of March 1993 so that the proposals could be discussed, in a preliminary fashion, at the next Board of Officers Meeting, to be held in Brussels on 14-16 April 1993. Needless to say earlier contacts would greatly be appreciated. Formal application may, of course, be submitted up to the Kyoto G.A.

OUTLINE OF REQUIREMENTS FOR URSI GENERAL ASSEMBLIES

Participation

750 - 1,500 participants

200 - 300 accompanying persons

Visas

URSI must have an assurance that there is no restriction on the issue of entry visas to bona fide scientists.

Dates and duration

URSI Assemblies are normally held between mid-July and mid-September and last for 10 - 14 days (including Meetings of the Board).

Expenses

The host country is responsible for all expenses incurred locally in connection with the organization of the Assembly. At recent Assemblies,

registration fees of \$160 to 240 for participants, and \$50 to 80 for accompanying persons, have been charged by the host Committee.

Location

The Assembly should be held in a location easily accessible from an international airport.

The site for the Assembly should be within 20 minutes travel time (by public transportation or special buses) from the hotels where participants will stay.

Rooms for meetings

A large hall seating 1,000 - 1,500 persons is required for the Opening and Closing Meetings, and for the General Lectures.

A room seating 80 persons is required for the URSI Council and for meetings of other large Committees.

In addition, about 3 rooms seating 30 persons are needed for small Committees, Working Groups, etc...

For the Commissions, it is necessary to have 10 rooms seating 150 - 200 persons with slide projectors, blackboards, etc. and, if possible, 10 small rooms for Commission Officers and Working Groups.

For the URSI Officials : one room each for the President, the Secretary General, the Treasurer, the Assistant Secretary General and the Administrative Secretary. There should be a large office room for the Past-President and the Vice-Presidents, and another large office room for the Commission Chairpersons and Vice-Chairpersons.

There must be adequate open space with seats for participants to meet informally.

Refreshments

Light refreshments should be available for the morning and afternoon coffee breaks in locations close to the rooms where the Commissions meet.

There should also be a central buffet where participants can have light refreshments, especially at midday for those who do not wish to return to their hotels.

If the time taken to return to the hotels is great, the number of participants wishing to have a mid-day meal on or near the Assembly site will be quite large.

Secretarial facilities

The Local Committee should provide a minimum of 4 typists who can deal with English and French material, including manuscripts in these languages. A room for these persons should be available.

A machine for duplicating documents rapidly (up to 1,000 copies) is required. Spare parts or a spare machine must be easily and quickly available in case of faulty operation or breakdown.

Modern office facilities (database, wordprocessors, fax, etc...) should be available.

Venues of URSI General Assemblies

I	1922	Brussels (Belgium)
II	1927	Washington, D.C. (U.S.A.)
III	1928	Brussels (Belgium)
IV	1931	Copenhagen (Denmark)
V	1934	London (U.K.)
VI	1938	Venice (Austria)
VII	1946	Paris (France)
VIII	1948	Stockholm (Sweden)
IX	1950	Zurich (Switzerland)
X	1952	Sydney (Australia)
XI	1954	The Hague (Netherlands)
XII	1957	Boulder, CO (U.S.A.)
XIII	1960	London (U.K.)
XIV	1963	Tokyo (Japan)
XV	1966	Munich (Germany)
XVI	1969	Ottawa (Canada)
XVII	1972	Warsaw (Poland)
XVIII	1975	Lima (Peru)
XIX	1978	Helsinki (Finland)
XX	1981	Washington, D.C. (U.S.A.)
XXI	1984	Florence (Italy)
XXII	1987	Tel Aviv (Israel)
XXIII	1990	Prague (Czechoslovakia)
XXIV	1993	Kyoto (Japan)

For further information, please contact :

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T. OKOSHI

THE XXIVTH GENERAL ASSEMBLY

THE SCIENTIFIC PROGRAMME IN KYOTO AT THE XXIVTH GENERAL ASSEMBLY

Although important matters are discussed and decided upon in the various business sessions at the General Assembly, the core of the activities is the scientific programme, as it should be for a Scientific Union. It seems that we shall have as rich a scientific programme as we usually have, with this characteristic URSI touch of a very wide range of topics, making a General Assembly a unique type of meeting.

The general outline of the programme was formed last year with a meeting of the Commission Chairmen, ending with a 7 day programme totalling about 110 sessions. The First Announcement, a fifty page booklet describing all the sessions, was sent out last summer with a deadline for submission of 1-page abstracts at January 15 1993. The convenors of the various sessions are now deciding how to distribute the accepted papers among the invited, contributed and posters.

The response to the call for papers, including the invited ones, was a grand total of 1313, of which 233 came from the host country Japan. This is an average of 12 per session, so it is clear that we shall need the large poster session in order to accommodate everybody, depending on the rejection rate. A total of 510 posters may be on display at the same time!

It is of interest to study the distribution of the submitted papers at the deadline among the commissions:

A	B	C	D	E	F	G	H	J	K	?
49	249	114	86	91	108	199	204	107	104	3

Commission B is certainly a strong URSI Commission. It is also noteworthy that the new Commission K on Electromagnetics in Biology and Medicine has a good start (it is the first General Assembly of this Commission).

It has been a good tradition of the past General Assemblies that special attention is given to young scientists, with special grants available. This tradition is continuing in Kyoto, and a total of 189 young scientists have submitted papers. This is quite encouraging for the future of URSI, although it will probably not be possible to give a grant to everybody.

JÖRGEN BACH ANDERSEN
HIROSHI MATSUMOTO

PRACTICAL PREPARATION OF THE ATTENDANCE AT THE GENERAL ASSEMBLY

Professor Matsumoto sent us the following message :

"Information on the registration and hotel reservation will appear in the Second Circular of the URSI 24th General Assembly which will arrive by the end of April. It is strongly recommended to book airline tickets as soon as possible because all airlines arriving in Japan in the third week of August are full with Japanese tourists returning from overseas at their end of summer vacation. "

YOUNG SCIENTISTS AT THE KYOTO GENERAL ASSEMBLY A PRELIMINARY REPORT

Some background to plans for the young scientist programme at Kyoto was given in the March 1992 URSI Bulletin. At Prague we had more than twice as many young scientists as at any previous general assembly. At Kyoto our Japanese hosts have generously agreed to provide places for an even higher number.

It was therefore necessary to obtain substantially more applications than the 136 which we got from 37 countries in 1990. Publicity was through the member committees, the scientific commissions and their conferences, and URSI-related conferences, the young scientists committee, the *Radioscientist* and URSI Bulletin, other URSI-related publications (e.g. *IEEE Antennas and Propagation Magazine*) and through numerous personal contacts. Special efforts were made to reach potential applicants in developing countries through the Third World Academy of Sciences at Trieste, where our Secretary General lectures, and through letters to contacts in some developing countries. Colleagues in the countries of the former Soviet Union were also often reached by the individual contacts.

After a deadline for applications in January we had received 222 applications from 45 countries. As in 1990, Prof. Zombory (Hungary) is examining the 68 applications from E. Europe and the former Soviet Union. I have dealt with the remaining 153 applications of which approximately 96 are from developed countries and 58 are from developing countries. The Japanese URSI committee will select the applicants from Japan.

Most of the applications I have seen are very good and deserve an URSI award, in my opinion, and many are excellent. Fortunately, most have indicated they wish to present their paper in a regular session, for the policy of the technical programme committee is to include as many of these papers as possible in the regular sessions.

Scientific merit, geographical distribution and perceived need of support affect selection. A few member committees have ranked their applicants. This is very helpful but many applications have gone directly to the URSI secretariat, often because the member committee address is not known or there is insufficient time. This should be less of a problem after 1993 and implementation of the correspondents network. At present, however, much of the ranking by country is done by Prof. Zombory and me. These are sent to Ghent where Profs. Van Bladel and Cullen will make the final selection based on the number of available places and, for some, the amount of travel support.

Partial or full support for travel is offered only to applicants from some developing countries or from countries with currency difficulties. The latter are generally the countries of E. Europe and the former USSR. As these form the largest group of qualified applicants with financial barriers to attendance, the URSI Board proposes to allocate funds to assist their travel to Kyoto. The other group requiring assistance are those from developing countries. With a few exceptions, these are countries not members of OECD or OPEC or the newly industrialized economies of Asia. This leaves most of Latin America, Africa and Asia. Travel costs to Kyoto from S. America and Africa are high and our resources are limited so, unless other support is available, most young scientists from developing countries at this general assembly will be from Asia. Not all developing country applicants require travel support but requests from those meriting awards are in total more than twice the funds for that purpose. Consequently there will be no URSI travel funds for awardees from developed countries, however needy. It is hoped that an URSI young scientist award can be used to induce local travel support.

Over the years the character of URSI general assemblies has changed from an event primarily for senior radioscientists to one in which younger colleagues also play a leading role. The scale and quality of the response to the 1993 young scientist awards scheme indicates a substantial further progression of this evolution at Kyoto. I believe it is promising for the future of URSI.

E.V. JULL

URSI YOUNG SCIENTISTS BETWEEN GENERAL ASSEMBLIES

In addition to support provided at general assemblies, URSI also promotes the attendance of young scientists at some of the numerous other meetings which URSI organizes or co-sponsors between general assemblies. Recent URSI records show the following numbers supported : 1989 (53), 1990 (104 - including 96 at Prague), 1991 (40) and 1992 (60). Young Scientist support activity has been growing with about as many young scientists supported between general assemblies as at them.

Support may be provided either directly from URSI funds, from URSI commission funds or from conference receipts, as with some co-sponsored meetings (e.g. IGARSS). Selection is entirely by the conference organizers. Indirect URSI support shared with societies organizing a conference, would, if included, increase some of the numbers above.

There is a three year cycle to many URSI affairs and it happens that most activity between general assemblies occurs in the year prior. 1992 was such a year with 12 events where young scientists received URSI support. A major event was the URSI Electromagnetic Wave Theory Symposium (Commission B) in Sydney, Australia, where 16 young scientists received grants for accommodation and travel ranging from \$390 to \$1,750, depending on the distance travelled. Another was ISSSE'92 in Paris (Commissions C and D) with 11 young scientists, mostly with travel grants of about \$500. Altogether URSI meetings and URSI funds provided \$42,500 to support the attendance of the 60 young scientists in 1992.

URSI also supports the attendance of young scientists from developing countries at the Colleges on Theoretical and Experimental Radio Propagation, which have been organized at the International Centre for Theoretical Physics in Trieste, Italy. The numbers supported by URSI, 27 in 1989 and 26 in 1991, are included above. Several URSI officials, including the secretary general, lecture at this college. URSI's financial contribution has traditionally been to support the cost of bringing the teaching staff to Trieste. It has been the major contact URSI has with young scientists from some developing countries and a few of them have been supported more than once at URSI meetings. This rarely happens to young scientists from developed countries.

In Eastern Europe and the former USSR it is not only young scientists who require assistance to attend international meetings. URSI Support for colleagues from these countries has been responding since requests for support began to increase about 1989. Eighteen scientists from these countries accounted for about one third of all URSI young scientist support provided in 1992. Fourteen older colleagues also received grants. Together they accounted for about half the total of \$50,000 in URSI attendance support in 1992. The numbers supported are small compared to the number of requests received, but these figures show URSI's policy of giving priority to this region during its period of economic difficulty.

E.V. JULL

SHOULD URSI HAVE INDIVIDUAL MEMBERS?

The members of URSI are the Committees established in territories or countries by the Academies of Science or similar institutions, and many radio scientists do not have any personal involvement with URSI. Since we would all like to see URSI become the organization for the interaction of radio scientists world-wide, how can we better associate individual scientists with URSI

- to make them feel at home in the organization
- to keep them informed about what is happening
- to give them a voice in the activities

URSI has been considering the matter for several years. As a first step, a Network of Correspondents has been established as described in the December 1992 URSI Bulletin. Do we wish this to evolve into a type of individual membership similar to that instituted, for example, by the International Astronomical Union? If so, what form should the membership take? Some ground rules that have been suggested are as follows:

1. Any form of individual membership must not disturb our traditional relationship with the Academies of Science and the support that they provide. For this reason, a title other than Member may be essential. Titles such as Affiliate Member, Corresponding Member or Personal Member have been suggested.
2. There should be no fee for membership.
3. There should be criteria for membership.

4. Membership should be for a specified period, e.g. two triennia.
5. A numbered membership card should be issued showing the period of membership.
6. A membership can be renewed on showing evidence of radio science activity during the previous period of membership.
7. There must be annual contact, for example, via a brief newsletter. A fee could be charged for those who desire more frequent information, such as the Bulletins, etc.
8. Such membership should not undercut the role of the Member Committees.

A form of membership similar to this could be attractive to radio scientists throughout the world and serve to bind them to URSI. The advantages to URSI as an organization are obvious, and individual scientists could benefit in many ways including, for example, reduced subscription rates for some technical journals, and reduced registration fees at technical meetings co-sponsored by URSI or by a Member Committee.

At the Kyoto General Assembly it is important that we decide what (if anything) should be done, and this is one of the main items on the agenda. On behalf of the URSI Membership Committee, and to help us frame a proposal, I solicit input from all radio scientists concerning the concept of individual membership as well as the details. Please send your comments as soon as possible to:

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PROFILE OF MEMBER COMMITTEES

ISRAEL

The URSI Committee in Israel operates as a committee chartered by the Israel Academy of Sciences and Humanities. Its delegation to URSI is formally nominated by the Academy, upon recommendation by the Committee. The Committee is operating by statutes agreed upon by the Committee in 1981. According to these statutes the objectives of the committee are:

- To represent Israel in URSI and follow the URSI statutes
- To act as an arm of the Academy in supporting government offices in their task of forming scientific policies
- To cultivate Radio Science and its applications in Israel.

The members of the Committee are chosen by the on-board members. The choice is based on scientific achievements and a commitment by the new members to contribute their talents to the activities derived from the objectives of the Committee. Each member is a member of at least one Commission.

There are 35 members in the Committee at the present time, spread over all the Commissions.

The Committee operates without a budget, and finances its activities from registration fees to seminars and conferences it organizes, and from occasional contributions.

The Committee holds one formal Assembly every year, and in addition organizes meetings of the commission chairmen, as well as seminars, conferences, etc.

The Committee has contracted last summer with the Division for External Studies of the Technion to serve as its secretariat. That Division also acts as an organizer of meetings, and has the priority in organizing meetings for the Committee.

DR. JOSEPH SHAPIRA
President, URSI Committee in Israel

NIGERIA

The Nigerian Association of Radio Science (NARS) was inaugurated in Lagos, Nigeria, on 23rd October, 1980.

Objectives

The objectives of the Association are : to provide a forum for the exchange of ideas, identification of and solution to national problems in communication engineering; to offer opportunity for effective Nigerian participation in the activities of world bodies responsible for radio communication matters (particularly URSI) ; to organize workshops, symposia and conferences on important subjects relevant to national development.

Membership

Membership of the Association is drawn from scientists, engineers and technologists in Nigeria's Federal and State Radio and Television Broadcasting Organizations, the Federal Ministry of Communications, Universities, Polytechnics, Research Institutes, the signals Corps of the Nigerian Armed Forces, and practitioners in the private sector. Some of these organizations are corporate members of the Association.

Chairmen (Past and present)

Mr. S.V.A. Santos : February 1981 - March 1984

Prof. I.E. Owolabi : March 1984 - June 1990

Prof. G.O. Ajayi : June 1990 - to date

Historical development

Prior to the inauguration of the Nigerian Association of Radio Science, the participation of Nigeria as a Member Committee in URSI was undertaken by a body formerly known as the National Committee of IUGG/URSI which came into being on March 18, 1968. In 1974, the Committee changed its name to the Nigerian Association of Planetary and Radio Sciences (NAPRS). By 1980, the membership and range of activities of the NAPRS had increased so much that it was considered desirable to change the name of this umbrella body to the Nigerian Union of Planetary and Radio Sciences (NUPRS) under which three Associations were established, namely :
NAG - Nigerian Association of Geodesy;

NARS - Nigerian Association of Radio Science;
GAN - Geophysical Association of Nigeria;

These associations were set up to enable them concentrate their attention on their specific areas of expertise nationally and interact with their respective world bodies, while the NUPRS serves as the coordinating body to ensure cooperation and effectiveness. Recently, two other Associations have been formed and affiliated to the NUPRS. These are :
HYSAN - Hydrological Sciences Association of Nigeria;
NAM - Nigerian Association of Meteorology;

As their names suggest, these Associations concern themselves with activities relating to the international Associations of Metrology, and Hydrological Sciences, respectively.

It is pertinent to mention that these five Associations exist as autonomous bodies within Nigeria, but they operate only through the NUPRS with regards to their international affiliations. Thus, the NUPRS is the Nigerian organization recognized by IUGG and URSI as representing Nigeria.

Activities

Before the formal inauguration of the Nigerian Association of Radio Science in 1980, a national Symposium on Broadcasting in Nigeria was held in 1978 at Ile-Ife under the umbrella of the former Nigerian Association of Planetary and Radio Sciences (NAPRS).

In 1988, the NARS held a seminar in Lagos on Current Trends and Future Developments in Telecommunications in Nigeria.

In 1990, an ECOWAS/ITU sponsored Regional Workshop on Satellite Communications for West African Countries was held under the joint auspices of the Nigerian Association of Radio Science and other government organizations.

Lectures are held on topical issues in radio science by the Association during the Annual General Conference of the Nigerian Union of Planetary and Radio Sciences (NUPRS), when each Member Association holds scientific activities.

Some topics covered during such conferences are :

- (i) Critical appraisal of Radio Broadcasting in the last decade.
- (ii) Television Services in Nigeria in the last decade.
- (iii) Earth and Radio Sciences in the 1990s.

- (iv) Mobile Communication Services in Nigeria as it affects the Military.

The Association also plays active part generally in the field of radio science especially radio communication in Nigeria. The association maintains good relationship with the Ministry of Communications, the Nigerian Telecommunication Limited, Federal and State Radio and Television organizations. The Association has a representative on the National Committee on Space Applications.

G.O. AJAYI
Chairman, Nigerian Association of Radio Science

NEWS FROM THE MEMBER COMMITTEES

EGYPT

The Secretariat has just received the Proceedings of the Ninth National Radio Science Conference, organized in Cairo from 18 to 20 February 1992 (see Bulletin of June 1991).

ISRAEL

The Committee in Israel recently organized the TEDER 93 Conference. This conference (the title of which means "Frequency 93") was held on the 5th of January 1993, in Hertzlia - the venue where the COMMSPIRE was held in 12/1991. It was a national conference, focused on the challenges facing the radio communication in Israel, where the soaring growth of the field meets a congested spectrum. Academic, industrial and government communities enjoyed a very successful open discussion. The Conference was chaired by Dr. J. Shapira.

The key note address was given by Dr. Ilan Maoz, the advisor to the Minister of Telecommunications and "the man behind the policy". Several sessions were on the programme, viz.

Session 1: Mobile and Personal Communications (Prof. S. Schitz, chair)

J. Shapira - Choice of standard for cellular in Israel

R. Maidan - transition from analog to digital, from cellular to personal

R. Neudorfer - Capacity, spectral efficiency and coverage in digital cellular systems

J. Perl - Advanced technologies for cellular networks

Panel (S. Klepner, MOC, Chair)

Session 2: Spectral Allocation and Management (S. Klepner, chair)

Leandros - Spectral management algorithms

S. Vax - IDF spectral issues

A. Patir - Bezek policy

D. Sklarski - technology and spectral policy

S. Klepner - spectral needs and MOC planning toward year 2000

Panel (D. Sklarski, chair)

Session 3: Satellite Communications (Prof. I. Bardavid, chair)

A : GEO

H. Carmel - Satcom services in Israel

R. Avitzur - DBS and TV broadcast via satellites in Israel

M. Tzuk- paging via satellite

A. livne - Mobile satcomm via Inmarsat

B: LEO

R. Maidan - Iridium - global personal communication via satellite

A.V. Kuck - spectral allocations for LEO

M. Shahar - Techsat - the Technion Satellite

Short presentations : Elipso, Globalstar.

The 200 participants expressed their interest and satisfaction in the choice of topics, the high standard of presentation and the nature of the open discussion between the parties involved.

The Israel National Committee for Radio Science now contemplates forming a continuing forum, to openly discuss and resolve challenges and conflicts toward the development of the telecommunication system in Israel. The Ministry of Telecommunications showed an interest in that forum, conceived as an opportunity better to communicate and form a strategy.

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REPORTS ON URSI-SPONSORED MEETINGS

INTERNATIONAL SYMPOSIUM ON MIDDLE ATMOSPHERE SCIENCE, KYOTO (MAS Symposium)

23-27 March 1992, Kyoto, Japan

The International Symposium on Middle Atmosphere Science, Kyoto (MAS Symposium), hosted by the Radio Atmospheric Science Center of Kyoto University, supported by the Ministry of Education, Science and Culture of Japan, and co-sponsored by the Union Radio-Scientifique Internationale (URSI), was held at the New Miyako Hotel in Kyoto, Japan, March 23 - 27, 1992. It was sponsored also by the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), the International Association of Meteorology and Atmospheric Physics (IAMAP), the International Association of Geomagnetism and Aeronomy (IAGA), the Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS), and the Meteorological Society of Japan.

The MAS Symposium was attended by more than 150 participants from 14 countries. The programme included 87 invited and contributed papers and 43 poster papers which were related to recent progress and future perspectives on a wide range of issues concerning middle atmosphere dynamics and chemistry, transport, environmental systems, etc. Some selected papers will be published in a Special Issue of the Journal of Atmospheric Physics, which are currently being edited by Co-guest editors, Professors S. Kato and S. Fukao.

The major topics were as follows :

1. Gravity waves and turbulence
 - case studies and spectra
 - climatology and sources
 - new observation techniques
2. Tides and planetary waves
3. Ozone and minor constituents
 - Stratosphere
 - Mesosphere
4. Aerosol chemistry effects

5. Upper Atmosphere Research Satellite (UARS)
6. The Arctic and Antarctic : Similarity and differences
7. Global network studies
8. Equatorial middle atmosphere
9. QBO : Tropical and extratropical
10. Climate change in the middle atmosphere
11. Decadal variability
12. Stratosphere-troposphere coupling, and
13. Mesosphere-thermosphere coupling.

A special lecture was given by Dr. C.O. Hines on a current topic of "Waves and their interactions in the middle atmosphere". An after-dinner speech was made by Professor W.E. Gordon at the Symposium Reception in honour of Professor S. Kato, Chairman of the MAS Symposium, who retired from Kyoto University soon after the Symposium. The speech was entitled "Dreams and legends" and made a deep impression on all participants.

The Symposium is very grateful to URSI for financial support to two participants from developing countries.

Extended abstracts of the MAS Symposium are available at the following address :

Professor S. Fukao
Kyoto University
Uji, Kyoto 611
Japan.

S. FUKAO

INTERNATIONAL GEOSCIENCE AND REMOTE SENSING SYMPOSIUM

28-29 May, 1992, Houston, Texas, USA

The meeting was attended by 683 participants, including 50 for the URSI Programme (from 11 countries). There were about 17 general topics, such as Inverse Scattering, Radio Oceanography, EM Geophysics and

Telecommunication Studies. Prof. A.Q. Howard, URSI Representative, organized, with the help of Prof. Liang Shen, three special sessions on subsurface electromagnetics, specifically on

- Borehole electromagnetic sensing
- Cross well electromagnetic tomography
- Ground penetrating radar

The URSI Technical Committee members were Professor Liang Shen, Professor W.E. Gordon, Professor Stuart Long, Dr. K. Krishnen, Dr. D. Pitts, Dr. W. Vogel and Professor R. Liu.

The next venues for IGARSS are Tokyo (1993), Pasadena (1994), Florence (1995) and Lincoln, Nebraska (1996).

A DECADE OF ADVANCES IN RADIOWAVE PROBING OF THE HIGH LATITUDE IONOSPHERE AND ATMOSPHERE

10-13 August, 1992, Fairbanks, Alaska, USA

Some 40 scientists from 19 different research organizations in Canada, Finland, France, Germany, Norway, Russia, Sweden, the U.K. and the U.S. attended a symposium held at the Geophysical Institute of the University of Alaska, Fairbanks from August 10 to 13, 1992. The title of the Symposium was "A decade of advances in radiowave probing of the high latitude ionosphere and atmosphere", and it was officially sponsored by the International Union of Radio Science (URSI) Commission G (Ionospheric Radio and Propagation). Other sponsors included the National Science Foundation (NSF), the Geophysical Institute of the University of Alaska, Fairbanks and the Applied Physics Laboratory of Johns Hopkins University.

The symposium was convened by Dr. Ray Greenwald of the Applied Physics Laboratory of Johns Hopkins University and Professor Emeritus Robert Hunsucker of the Geophysical Institute of the University of Alaska, Fairbanks, ably assisted by the Local Organizing Committee; Dr. Syun-Ichi Akasofu, Director of the Geophysical Institute and Phyllis Hunsucker of RP Consultants-Fairbanks. The Conference and Special Events Department of University of Alaska, Fairbanks provided excellent support and managing of the Symposium.

This meeting occurred 10 years to the day after the "First Fairbanks URSI Symposium" in 1982, also convened by Ray Greenwald and Robert Hunsucker, entitled "Radio Probing of the high-latitude ionosphere and atmosphere : new results and new techniques". Forty papers were presented in the 1992 symposium describing progress made in developing and improving techniques and in scientific results in the area of large irregularities in the polar cap ionosphere, ionosphere modification, the understanding of "auroral substorms", "gravity waves" in the high latitude ionosphere, auroral effects on high frequency radio propagation and prediction, and "radio noise" from the aurora. There are plans to build large new radio experimental facilities in : Alaska, Spitzbergen, Resolute, Canada and other locations in the northern polar regions.

The Social programme included a "Reception/Ice-breaker" Monday evening in the Geophysical Institute globe room, an URSI Buffet at the Hunsucker residence Tuesday night and the Alaskan Salmon Bake on Wednesday night. Dr. Akasofu invited the participants to return to Fairbanks in the year 2002 to again review our progress.

R. HUNSUCKER

ASTRONOMY WITH MILLIMETRE AND SUBMILLIMETRE WAVE INTERFEROMETRY

5-9 October 1992, Hakone, Japan

This conference was held under the sponsorship of IAU Commission 40 (Radio Astronomy) and URSI (Commission J). Besides the IAU and URSI supports, additional financial support was provided by 1) the Ministry of Education, Science and Culture of Japan, 2) the Japanese Society for the Promotion of Science, 3) the International Communications Foundation, 4) the Mitsubishi Electric Co, 5) Fujitsu Ltd., 6) the Nihon Tsusinko, Co, Ltd. This meeting was hosted by the Nobeyama Radio Observatory, National Astronomical Observatory. There were 160 registered participants from 14 countries. The participants came from Australia, Canada, China, Finland, France, Germany, Japan, Korea, Netherlands, Russia, Spain, Sweden, the U.K. and the USA. The Chairpersons of the Scientific Organizing Committee were M. Ishiguro and J. Welch, and M. Morimoto was the Chairperson of the Local Organizing Committee.

This conference was the first international meeting devoted to millimetre and submillimetre wave interferometry. The scope of the meeting was focused on the technical aspects, the status of the operating arrays, and the future plans and scientific directions of millimetre and submillimetre wave interferometry. The scientific programme was divided into four major sessions. The sessions consisted of 25 invited reviews, 20 contributed talks and 100 poster papers.

The first session was devoted to reports on the existing interferometers including the mm-VLBI with a special reference to highlights of astronomical results as well as upgrading plans for the near future. The first experiment of submillimetre interferometry at Mauna Kea demonstrated feasibility in this field. The second session was concerned with technical innovations on high-precision antennas, millimetre and submillimetre wave receivers, wideband digital correlators, atmospheric problems and calibrations, and mosaicing.

The third session was devoted to the recent astronomical results in the four major fields; late-type stars, the centre of the Galaxy, star formation, and galaxies. There were hot discussions on the very recent results on the disk around a T Tauri star and the protogalaxy IRAS F10214+4724. In the final session, major plans for the future large millimetre and submillimetre array were presented and a possible international collaboration was discussed. The main results were summarized at the end of the meeting by Jack Welch.

The participants enjoyed traditional Japanese music and dancing, and a bus tour from Hakone to the Nobeyama Radio Observatory via the skirts of Mt. Fuji.

The proceedings are being edited by M. Ishiguro and J. Welch, and will be published in the conference series of the Astronomical Society of the Pacific.

M. ISHIGURO

**7^{ÈMES} JOURNÉES INTERNATIONALES DE NICE SUR LES
ANTENNES (JINA'92)**

12-14 novembre 1992, Nice, France

Les 7^{èmes} Journées Internationales de Nice sur les Antennes ont eu lieu du 12 au 14 novembre 1992 au Palais des Congrès Acropolis à Nice.

Organisées par le Centre National d'Etudes des Télécommunications, la Société des Electriciens et des Electroniciens de l'Université de Nice-Sophia-Antipolis, ces Journées bénéficient du patronage de l'URSI et de l'IEEE Antennas and Propagation Society.

Cette année a marqué le 10^{ème} anniversaire des JINA. En effet, créées en 1982, ces Journées n'ont cessé de s'étendre, autant en ce qui concerne la diversité des sujets traités que le nombre de participants. Cette édition a attiré plus de 300 (304 exactement) chercheurs et ingénieurs représentant 23 pays.

Les exposés techniques ont pris la forme de conférences invitées (16) et de présentations affichées (123).

Les actes du symposium sont disponibles au prix de 650,00 FF, auprès du Secrétariat JINA (CNET/PAB, Fort de la Tête de Chien, F-06320 La Turbie, France). Les prochaines Journées auront lieu du 8 au 10 novembre 1994 à Nice.

A. CERBONI

INTERNATIONAL SYMPOSIUM ON BROADCASTING IN THE NINETIES

16 - 18 November 1992, Ile-fe, Nigeria

The Symposium was organised by the Nigerian Association of Radio Science (NARS) and the Obafemi Awolowo University, Ile-Ife, Nigeria, which was also the venue of the Symposium. The Symposium was cosponsored by URSI, ITU and other national organisations such as the Federal Radio Corporation of Nigeria (FRCN) and the Nigerian Television Authority (NTA). The Symposium Scientific Programme Committee was chaired by Prof. G. O. Ajayi, who is also the Chairman of the Nigerian Association of Radio Science, the Nigerian Member Committee of URSI.

The Symposium was held from November 16 -18, 1992, although participants started arriving at the Obafemi Awolowo University in the evening of November 15 for registration. The official Opening Ceremony took place in the morning of November 16. The Welcome Address by the Vice Chancellor of the Obafemi Awolowo University was followed by an opening address by the President of the Nigerian Union of Planetary and Radio Sciences (NUPRS). The keynote address

was delivered by the representative of the Honourable Minister of Transport and Communication.

The sub-themes for the International Symposium on Broadcasting in the Nineties were :

- (I) Broadcasting and WARC-92
- (II) Broadcasting and Frequency Management
- (III) Applications of Digital Techniques in Broadcasting
- (IV) Advances in TV Systems and Satellite Broadcasting
- (V) AM and FM Broadcasting in Developing Countries
- (VI) Deregulation in Broadcasting.

The Symposium was well attended with about 50 participants, comprised of scientists and engineers from the Universities, Telecommunication Organizations as well as practioners from Radio and Television Organizations. There was a good geographical spread of the participants from Nigeria.

Nine young scientists sponsored by URSI participated in the Symposium. The only young scientist from outside Nigeria could not attend because of a last minute problem of purchasing a ticket from Nairobi, Kenya for reimbursement in Nigeria. Three international guest speakers were expected at the Symposium. Only Mr. P. Kantchev from the ITU came as guest speaker. ITU and URSI sponsored the trip of Mr. Kantchev to Nigeria. Prof. Assis from Brazil, who sent his paper in advance could not attend due to ticket problems. Prof. Assis's paper was presented on his behalf. Mr. Samara, the Chief Executive of AFRISPACE, in the U.S.A. regretted his inability to participate a couple of days before the Symposium.

There were three plenary and three technical sessions. The papers presented covered the broad areas of broadcasting including policy issues, frequency management, deregulation in the broadcasting industry, digital techniques in broadcasting and current trends in the field. Eight invited papers and many technical papers were presented.

The closing ceremony took place in the afternoon of Wednesday, November 18, 1992, during which reports from rapporteurs were considered and resolutions passed. Some of the resolutions were :

1. Considering the decisions at the World Administrative Radio Conference WARC 92 and the deregulation of Broadcasting in Nigeria and the functions of the Nigerian Broadcasting Commission (NBC) as contained in the decree No. 38 of 1992, the symposium called on the Federal Military Government to set up as a matter of urgency a National Frequency Management Board under the

Presidency. The Board should be specifically charged with the responsibility of allocating frequency for Broadcasting and Telecommunication purposes and ensuring the judicious utilisation of the radiofrequency spectrum.

2. Taking into consideration the rapid development of communications in the country, the symposium recognises the need for closer collaboration between the Broadcasting Organisation of Nigeria (BON) and the Nigerian Association of Radio Science (NARS). It therefore recommends that the two bodies should work closely together for the advancement of knowledge and development of skill in the field of radio science. Such collaboration could take the form of Seminars, Symposia, Short-term courses, etc.
3. Given the importance of the decisions taken at WARC 92, the Symposium resolved to organise a Seminar in 1993 to examine the implications of those aspects that affect radio and television broadcasting.

REPORT ON THE 30TH MEETING OF THE ICSU GENERAL COMMITTEE

1. Introduction

The ICSU General Committee, consisting of six officers and six ordinary members of the board, 20 representatives of the scientific unions and 12 representatives of the national members, meets annually. This year's meeting was at the Israel Academy of Science and Humanities in Jerusalem, November 5-7, 1992. About half the unions were represented by their presidents, the others by vice-presidents, past presidents or secretary generals. There is a problem with continuity for ICSU. While no person may serve on the general committee for more than 12 years, very few of the union representatives serve more than three.

URSI is currently rather well represented on the ICSU Board with a vice president (W.E. Gordon) and treasurer (M. Petit), both former URSI officials, but that will change after the 1993 General Assembly. This report will not attempt to cover all the topics discussed in the three days, some of which bear no relation to URSI, but will concentrate on those which do and those which may be of general interest.

The meeting was chaired by the ICSU president, M.G.K. Menon.

2. *UNCED*

Much of the agenda of this meeting dealt with topics arising from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June. ICSU, on request, had provided scientific input to UNCED and so felt obliged to provide some follow up. Two such topics placed on the agenda by the executive board were energy supplies and population and human reproductive biology. It was agreed to set up working groups in each of these areas.

3. *IUCAF*

The IUCAF report on its participation in the World Administrative Radio Conference was circulated. As URSI representative, I was asked to comment. My impression is that IUCAF has been effective in protecting frequencies essential to radioastronomy and space research at this important conference. The IUCAF report recommends that URSI commissions E and J in particular examine the many resolutions and recommendations of WARC'92 for CCIR to conduct sharing studies.

4. *Working Group Meetings*

The Earth, Space, Physical, Chemical and Mathematic Sciences working group, consisting of about 12 individuals met separately from the biological sciences group and the national scientific members. A 10 minute report on important recent developments in radio science was expected from URSI and I chose to talk on the new GPS Geosciences Instrument (GGI), the new radio system which provides accuracies as high as VLBI in radio geodesy but with more flexibility and which is capable of globally monitoring the earth, ice and sea surfaces to comparable precision.

5. *Review of Interdisciplinary Committees*

All ICSU committees and associates are reviewed periodically, usually every six years. In 1992 reviews of five committees were presented, including SCAR, SCOR and SCOPE. In each case recommendations for continuation of the committees were made, together with recommendations for changes.

Committees of interest to URSI to be reviewed are SCOSTEP and COSPAR. The SCOSTEP review panel is to be chaired by Dr. M. Petit. Some of its members are also on the COSPAR review panel to be chaired by your URSI representative. The SCOSTEP review is due in 1993, the COSPAR in 1993 or 1994, depending on whether it can be

completed in time for the ICSU General Assembly (October 4-8, 1993). The reviews are conducted by mail and are expected to be completed at least two months before presentation.

6. New Scientific Developments

Eight presentations of 10 minutes each were made by union representatives. These presentations are usually the most interesting part of ICSU meetings. A similar arrangement is planned for the URSI coordinating committee meeting in 1995.

7. Common Concerns

A variety of reports were heard in issues such as gender discrimination in science, ethical issues, cooperation with developing countries (COSTED) and ICSU press. A history of ICSU is being written. Since URSI is one of the oldest unions out of which ICSU was formed, the author of the ICSU history has been sent information on the history of URSI.

8. Cooperation with Scientists in Central and Eastern Europe

At the request of the Hungarian Academy of Sciences ICSU has sent a group of scientists to evaluate the structure of their scientific organization. A similar request has come from Russia. This is a new role for ICSU and one which could become a major activity.

9. Major ICSU Programmes

Reports on Global Change, IGBP, ASCEND-21 and UNCED were presented. The Agenda of Science for Environment and Development (ASCEND) into the 21st century met in Vienna in November 1991 and provided input to the UNCED conference in Rio de Janeiro in June 1992. All unions were asked to convert the recommendations of ASCEND into action. URSI's connection with these proposals is mainly through the use of radio remote sensing for global monitoring of the earth system.

ICSU has a special committee for the international Decade for Natural Disasters Reduction (SC-IDNDR). URSI could contribute here in the area of detection of the electromagnetic fields produced by cracking of rock prior to earthquakes.

10. Data and Information

FAGS, CODATA, the World Data Centres (WDC) and IGBP-Data and Information Service (DIS) are the data collecting agencies of ICSU.

FAGS is the most important agency for URSI but CODATA is larger. There is no plan to amalgamate these data-collecting agencies.

11. Adverse Environment Impacts on Astronomy

A small working group under COSPAR and IAU was proposed to make recommendations on the problems associated with "space junk".

12. Priorities for ICSU Activities

The committee agreed that proposals on the following topics should have high priority :

- nuclear wastes (IUGS)
- water safety (IUMS, IUNS)
- energy (IUPAC, IUPAP, IUGG, IUGS, IUBS)
- human reproductive physiology (IUPS, IUIS)

13. 24th General Assembly of ICSU

This will be in Santiago, Chile, October 4-8, 1993.

The standing finance committee was selected and includes your URSI representative.

The 31st meeting of the ICSU General Committee will be held at the same location October 1-2, 1993.

14. General Remarks

ICSU's role seems to be expanding from one of coordinating the work of its scientific unions and interdisciplinary committees and their international interdisciplinary research programmes to one of providing disinterested advice to governments not only on international scientific programmes but also on their internal scientific organizations. It has been dealing with very large and important issues, apparently with some success, but further expansion of these activities will surely require more resources, which governments presently seem reluctant to provide. Like the unions, ICSU's greatest resource is individuals willing to donate their time. As long as its work is interesting and challenging there seems to be no shortage of donors. But if otherwise there may be problems completing all of the tasks it would like to assume.

E.V. JULI

BI-ISOTROPICS'93 - A NOVEL MICROWAVE MATERIALS WORKSHOP

During the first week of February, 1993, Helsinki University of Technology hosted a workshop on novel microwave materials. Bi-isotropics'93 was the name of the four-day-and-night workshop that attracted 17 participants from 6 countries : Finland, Russia, Belorussia, France, United Kingdom and Germany. The focus of the talks was intended to be the theory and applications of bi-isotropic materials (chiral and non-reciprocal) in electromagnetics and microwave engineering, but it may be due to the nature of this rapidly progressing field that also results on more general, bi-anisotropic materials were discussed. The workshop was sponsored by the URSI Member Committee in Finland, the IEEE MTT Society, and the Electromagnetics Laboratory of Helsinki University of Technology.

Why this workshop? Well, electromagnetics and microwave technology are progressing these years with considerable pace. One of the frontiers at which major conquests are being made is that of new materials. It is only during the latest years that the microwave community has recognized the potentialities of novel, more complicated material effects in the design of new components and systems. Chiral materials may be the most popular example of these complex media, and quite a lot of time in the workshop was devoted to the theory, applications, and measurement principles of chiral media.

One highlight in Bi-isotropics'93 was the lecture "Covariant methods in the theory of electromagnetic waves", by 82-year old Academician Fedor I. Fedorov from Minsk, Belorussia, who is one of the greatest physicists of the former Soviet Union, and a pioneer of the research on optical activity.

A Book of Abstracts of the workshop has been compiled. To obtain a copy, please contact the Workshop Organizer :

Dr. Ari Sihvola
Helsinki University of Technology
Electromagnetics Laboratory
Otakaari 5A
SF-02150 Espoo, Finland
Tel. (358) 0-451 2261
Fax (358) 0-451 2267
E-mail : ari.sihvola@hut.fi

MEETING ANNOUNCEMENTS

NINTH ANNUAL REVIEW OF PROGRESS IN APPLIED COMPUTATIONAL ELECTROMAGNETICS

22-26 March 1993, Monterey, California, USA

The 1993 Annual Review of Progress in Applied Computational Electromagnetics aims to bring together computational technique developers, computational technique users, and analysts to share information and experience about state-of-the-art advances and practical application of electromagnetics modeling methods and computer codes. The symposium is sponsored by the Applied Computational Electromagnetics Society in cooperation with the IEEE Antennas and Propagation Society, the IEEE Electromagnetic Compatibility Society, and USNC/URSI.

Papers will focus on code validation and performance analysis, computational studies of basic physics, new computational techniques and new applications for existing techniques, code input/output issues, and computer hardware issues. Applications of interest include antennas, radar cross section, electromagnetic shielding, electromagnetic interference, remote sensing and geophysics, microwave components, communications systems, wave propagation, plasmas, bioelectromagnetics, electromagnetic compatibility, and inverse scattering. Techniques of interest include frequency-domain and time-domain techniques, integral equation and differential equation techniques, asymptotic methods, moment methods, finite difference and finite element techniques, modal expansions, perturbation methods, and hybrid methods.

Short courses will be offered in conjunction with the Symposium. Topics will include numerical techniques, computational methods, surveys of electromagnetic analysis, and code usage instruction. Vendor booths and demonstrations will feature commercial products, computer hardware and software demonstrations, and small company capabilities.

For further information, contact :

Professor Perry Wheless
University of Alabama, Dept. of Electrical Eng.
Box 870286, Tuscaloosa, AL 35487 - 0286, USA
Tel. 205 - 348 - 1757, Fax 205 - 348 - 6959

A REMINDER : FORTHCOMING URSI-SPONSORED MEETINGS

(see also December 1992 Bulletin)

8th International Conference on Antennas and Propagation
30 March - 2 April, Edinburgh, UK

Contact address : IEE Conference Department
Savoy Place, London WC2R OBL, UK
Tel. : (44) 71-240.18.71
Fax : (44) 71-497.36.33

ICC'93, International Conference on Communications
23-26 May, Geneva, Switzerland

Contact address : Dr. Thomas MITTELHOLZER
ICC'93 TPC Secretary, ISI ETF F103
ETH-Zentrum, CH-8092 Zurich, Switzerland

Air-sea Interface Symposium
29-30 June, Marseilles, France

Contact address : Mark A. DONELAN
Chairman, Air-Sea Interface Symposium
National Water Research Institute
Burlington, Ontario, Canada
Tel. : (416) 336-4879
Fax : (416) 336-4989
Telex : 061-8296
Telemail : M.DONELAN/OMNET

URSI Radio Science Meeting and IEE AP-S Symposium
27 June - 2 July, Ann Arbor, Michigan, USA

Contact address : Prof. T.B.A. SENIOR
Radiation Laboratory, Electrical & Computer Eng.
Dept., The University of Michigan, ANN ARBOR,
MI 48109, USA
Tel. : (1-313) 764-0500
Fax : (1-313) 747-2106
E-mail : Senior@um.cc.umich.edu.

OTHER MEETINGS WHICH HAVE BEEN BROUGHT TO OUR ATTENTION

1993 International Reliability Physics Symposium

22 to 25 March 1993, Atlanta, CA, USA

Contact address : IEEE-IRPS, P.O. Box 308,
Westmoreland, NY 13490, USA
Tel. (1-315) 339-3971, Fax (1-315) 336-9134

1993 QMW Antenna Symposium

25-26 March 1993, London, U.K.

Contact address : Mrs. Polly Allen
Department of Electronic Engineering
Queen Mary & Westfield College
Mile End Road, London E1 4NS, U.K.
Tel. (44) 71-975 5346, Fax (44) 81-981 0259

2nd Course on Digital Video : Coding Techniques and Applications

1 to 7 April 1993, Delft, the Netherlands

Contact address : Academie voor Informatica, Kruislaan 403
NL-1098 SJ Amsterdam, the Netherlands
Tel. (31) 20-525 7594, Fax (33) 20-525 7490
E-mail : avi@fwi.uva.nl

Intermag'93

13 to 16 April 1993, Stockholm, Sweden

Contact address : Mr. Chuck Thies
INTERMAG'93, c/o Congrex (USA), Inc.
7315 Wisconsin Avenue, Suite 606W,
Bethesda, MD 20814, USA
Tel. (1-301) 469-3355, Fax (1-301) 469-3360

Huitième Journées Nationales Microondes

12 - 14 mai 1993, Brest, France

Pour tous renseignements, s'adresser au secrétariat des JNM'93 :

G. Landrac : Tel. (33) 9800 1348, Fax (33) 9800 1343

A. Perennec : Tel. (33) 9831 6505, Fax (33) 9831 6131

Adresse courrier : Secrétariat des JNM'93, LEST/ENSTBr

B.P. 832, F-29285 Brest Cedex, France

Adresse électronique : jnm93@mot.enst-bretagne.fr

9th European Hybrid Microelectronics Conference

2 to 4 June 1993, Nice, France

Contact address : ISHM France, c/o Edigraphic
16 rue Guillaume Tell, F-75017 Paris, France
Tel. (33-1) 4766 0005, Fax (33-1) 4227 7030

PIERS 1993 : Progress in Electromagnetics Research Symposium

12 to 16 July 1993, Pasadena, CA, USA

Contact address : Dr. Jakob J. van Zyl, PIERS 1993 Technical
Chairman, c/o Ms. Georgene Peralta
Mail stop 180-404, Jet Propulsion Laboratory
4800 Oak Grove Drive, Pasadena, CA 91109, USA
Tel. (1-818) 354-9311, Fax (1-818) 393-4468

4th European Conference in Electron and Optical Beam Testing of
Electronic Devices

1 to 3 September 1993, Zurich, Switzerland

Contact address : Swiss Federal Institute of Technology,
Reliability Laboratory, EOBT 1993
ETH-Zentrum, CH-8092 Zurich, Switzerland
Tel. (41) 1-256 2743, Fax (41) 1-251 2172,
E-mail eobt93@nimbus.ethz.ch

44th International Astronautical Congress

16 to 22 October 1993, Graz, Austria

Contact address : W. Riedler, Space Research Institute
Austrian Academy of Sciences
Inffeldgasse 12, A-8010 Graz, Austria
Tel (43) 316-465 721, Fax (43) 316-463 697

1994 International Symposium on Electromagnetic Compatibility

17 to 19 May, 1994, Sendai, Japan. Abstracts due by 31 July, 1993.

Contact address : EMC'94/SENDAI
Tohoku Gakuin University, Dept. of Electrical
Engineering, Tagajo City, MiyagiPref. 9485, Japan
Fax (81) 22-368 7070

Eight International Symposium on Solar-Terrestrial Physics (dedicated
to STEP), 5 to 10 June 1994, Sendai, Japan

Contact address : Dr. A. Morioka, Dept. of Astronomy and
Geophysics, Tohoku University, Aramaki, Aoba
Sendai 980, Japan, Fax (81) 22+262 6332
E-mail : THKSTP(40.799)::Morioka (NSI/DEC)
and Morioka@stpp.geophys.tohoku.ac.jp (Internet)

NEWS FROM THE ITU

THE ITU RESTRUCTURED

The governing body of the International Telecommunication Union, ITU, the Additional Plenipotentiary Conference (APP-92) held in Geneva in December 1992, approved the new Constitution, new Convention and new structure of ITU. From 1 March 1993 the ITU consists of three Sectors - Radiocommunication, Telecommunication Standardization and Telecommunication Development. These Sectors will be supported by three Sector Bureaus and by the General Secretariat - by the elected Secretary General and Deputy Secretary General. The new Constitution and Convention of the ITU will enter into force of on 1 July 1994.

Abolishment of the full-time five-member International Frequency Registration Board (IFRB) was the greatest change mandated by the APP. The IFRB will be replaced by a part-time 9-member elected Radio Regulations Board following the Plenipotentiary Conference of Kyoto in the autumn of 1994. In the interim, the functions of the new Radio Regulations Board will be carried out by the incumbent members of the IFRB.

The new Radiocommunication Bureau will be responsible for the combined activities of the present IFRB and CCIR Secretariats, as well as certain activities related to the Radio Regulations and maritime mobile services previously in the General Secretariat. Mr. R.C. Kirby, the last Director of the CCIR, will assume the responsibilities of the first Director of the Bureau.

World Radiocommunication Conferences (WRC) to deal with the Radio Regulations will normally be held once every two years, and a Radiocommunication Assembly will normally be held in conjunction with these. The Assembly will principally organize and monitor the work of the Radiocommunication Study Groups, which will continue most of the work of the CCIR. The new element is that the Radiocommunication Study groups will prepare the bases for the regulatory aspects of Radiocommunication Conferences, in addition to technical and operational matters dealt with by CCIR Study Groups. This integrated approach to the preparation and conduct of radiocommunication conferences is expected to considerably streamline the radio regulatory process, presently under consideration in a Voluntary Group of Experts (VGE), which will complete its work early in 1994. Regional

Radiocommunication Conferences will be held as required. The first Radiocommunication Assembly will take place in Geneva from 8 to 16 November 1993, and an organizational WRC will take place from 15 to 19 November, also in Geneva.

The establishment of the Telecommunication Development Bureau (BDT) within the Telecommunication Development Sector was confirmed as the first Director of BDT was elected. Mr. A. Djihatampu (Indonesia) assumed his responsibilities as Director from 1 February 1993.

The Telecommunication Standardization Bureau takes over all the work of the CCITT and part of the work of the CCIR related to interconnection of radiocommunication systems in public telecommunication networks. Dr. Theo Irmer, the last Director of the CCITT, will assume the responsibilities of the first Director of the Sector from 1 March 1993.

No significant changes have been introduced to the General Secretariat. Dr. Pekka Tarjanne, the main architect of the changes, will continue as the ITU Secretary General and Mr. Jean Jipguep as Deputy Secretary General.

In the 4-year interval between Plenipotentiary Conferences, the functioning of the ITU will be overseen by the elected Council, composed of a selection of the membership. In the new structure, the ITU will be managed by the Secretary General and the Directors of the Bureaus, with considerably increased responsibility and accountability.

ANNUAL REPORT OF IUWDS

The readers of the Bulletin are referred to the March 1991 issue for generalities on the International Ursigram and World Days Service. The specific items in the IUWDS Report for 1992, recently received from Dr. R. Thompson, are as follows :

1. The Ottawa Solar-Terrestrial Predictions Workshop in 1992

IUWDS has sponsored a series of scientific workshops to bring together scientists, forecasters of the solar-terrestrial environment, and the users of those forecasts. Previous workshops in this series have been held in Boulder (1979), Meudon (1984) and Sydney (1989). A further meeting was held during 1992 in Ottawa, Canada from May 18 to 22. More than 150 scientists from 17 countries participated in the meeting which was organized on behalf of IUWDS by the Ottawa Regional Warning Centre which is a component of the Geomagnetism Programme of the Geological Survey of Canada.

A special meeting of forecasters was also held prior to the main Workshop. At this meeting representatives from Warning Centres, and others, discussed the operations of IUWDS and the requirements of forecasters for improved data and analysis techniques.

The Workshop created an environment in which scientists from solar, magnetospheric, ionospheric physics and geomagnetism as well as forecasters of solar-terrestrial conditions and users affected by the solar-terrestrial environment were brought together to communicate and exchange their knowledge and expertise related to the forecasting of the solar-terrestrial conditions.

The programme of the STP Workshop was divided into two parts. Firstly, during plenary sessions, invited speakers covered all aspects of solar-terrestrial physics relevant to forecasting. Secondly, four Working Groups - Solar, Magnetospheric, Ionospheric and Geomagnetic - held individual and joint sessions which covered topics such as flare predictions, solar cycles, solar wind, nowcasting state of the magnetosphere, interplanetary structures and geomagnetic activity, ionospheric models, magnetosphere-ionosphere coupling and others.

Since advanced technologies are increasingly suffering the effects of solar-terrestrial phenomena, a "Users Day" was organized during the Ottawa Workshop. Here, invited representatives from power companies,

pipeline operations, communications, Global Positioning System (GPS) users and satellite operators explained their problems and requirements to the scientific community.

The discussions and communications between users, scientists and forecasters proved very stimulating from a scientific and engineering perspective. Discussion at the Workshop also highlighted the need for real-time solar wind data available for forecasting purposes. This need was expressed in the form of a resolution passed by the workshop expressing support for efforts to provide a simple, reliable spacecraft to monitor the upstream solar wind.

As with previous Solar-Terrestrial Predictions Workshops, the "Proceedings" are being collected from papers presented at the meeting. This will be published in 1993 and made available to the scientific and forecasting community.

2. The Next Predictions Workshop

The strong interest on the Solar-Terrestrial Workshops have encouraged IUWDS to continue to arrange these meetings. At its Steering Committee meeting held during the Ottawa workshop, IUWDS accepted an offer from the Tokyo RWC to host the next "Predictions" meeting in Japan. This meeting is likely to be held in the Tokyo area during late 1995 or during 1996.

3. Steering Committee Meetings during 1992

There were two Steering Committee meetings during 1992 giving an excellent opportunity to review the progress of IUWDS and to discuss future developments. The first meeting was associated with the Ottawa STP Workshop and the second took place during the Washington World Space Congress in August. Several changes occurred within IUWDS during the year. Firstly, to the regret of the Committee, RWC Darmstadt ceased operations at the end of 1992 as a result of cutbacks by its host organization. Secondly, the Committee decided to grant existing "Associate Regional Warning Centres" the status of full warning centres. This move recognises the significant parts played by these centres in IUWDS operations. Thirdly, IUWDS decided to seek a new name which better reflects its role. This process is still continuing.

4. E-mail Data Exchange

Over recent years, the nature of IUWDS data and data exchange has been changing rapidly. Where previously data were transferred between

centres in highly compressed coded formats by telex, more recent exchanges have involved larger and more varied data sets transferred rapidly by electronic mail. A major effort for IUWDS during 1992 was to coordinate the expansion of electronic data exchange to all centres. By the end of the year, all RWCs had obtained access to an electronic mail network such as Internet and most of the data flow now takes place over these networks. Much effort has taken place between individual centres, and by IUWDS collectively, to facilitate the move to electronic data exchange. Further work will take place in coming years to take advantage of the great opportunities offered by the new system.

5. IUWDS Co-Sponsorship of Session at COSPAR Congress

IUWDS accepted an invitation by COSPAR to co-sponsor a meeting at the 1992 COSPAR/World Space Congress. The title for the meeting was "Solar Particle Events and Deep Space Missions", a subject which highlights the importance of the data exchange co-ordinated by IUWDS. Several IUWDS people were also appointed to the programme committee of this meeting.

6. Regional Warning Centres

The list is the same as in the March 1991 Bulletin. The representatives are as given in the June 1992 Bulletin, with one correction : Mr. P. Triska, Regional Warning Centre, Geophysical Institute, Bocni II, 141 31 PRAHA 4-Sporilov, Czech Republic and one deletion : Dr. P. Guessman.

PUBLICATIONS OF THE URSI COMMUNITY

A BRIEF REPORT ON THE STATUS OF THE REVIEW OF RADIO SCIENCE

Essentially all of the chapters for the RRS have been received, and the final editing process is well underway. As reported last time, a number of the chapters which were originally planned were not completed by the authors. Four chapters, indicated below in the Table of Contents with an asterisk, may still arrive in time to be included, but must be viewed as very doubtful. Regardless, we will have a book of at least 37 chapters, and most of what I have seen so far is very good. I've repeated the Table of Contents using the same chapter numbers as in previous reports, in order to reduce confusion. With the exception of the four marked chapters, I have the final manuscripts for all of these. Please note that some final chapter titles may differ slightly from those given below. By the time this issue of the Bulletin reaches most readers, the camera-ready master for the book should be in the hands of the Oxford University Press. I'll wait until we have reached that point to provide a more detailed report.

All of the authors and editors who have worked so hard to produce this book deserve our thanks and appreciation. Please review the book as soon as you arrive in Kyoto, and let your Commission Editors and the Publications Committee hear your suggestions and comments for the next edition!

Commission A: Electromagnetic Metrology edited by Peter I. Somlo

- *1. The International System of Units: Its Evolution by Claudio Egidi
- 2. The Current State of the Art of Coherent Optical Fiber Communications by F. Ebskamp, P. Jeppesen, and R. J. S. Pedersen

Commission B: Field and Waves edited by Staffan Ström

- 5. Iterative Methods for Radio Wave Problems by Ralph E. Kleinman and Peter M. van den Berg

6. Asymptotic Theory of Pulse Propagation in Absorbing and Dispersive Dielectrics by Kurt Edmund Oughstun and George C. Sherman
7. Application of the Image Concept in Electromagnetics by Ismo V. Lindell
8. A Survey of Integral-Equation Techniques for Three-Dimensional Microstrip Structures by Juan R. Mosig

Commission C: Signals and Systems edited by Peter A. Matthews

10. Code-Division Multiple Access for Commercial Communications by Manfred Suerst
11. Picture Coding by P. Delogne
- *12. Recent Advances in Error-Control Coding for Mobile Radio Systems by P. Farrell

Commission D: Electronics Photonics edited by Tatsuo Itoh

13. New Trends in High-Speed and Microwave III-V Devices by G. Salmer, P. A. Rolland, and D. Lippens
15. Communications Applications of Superconductivity by M. Nisenoff

Commission E: Electromagnetic Noise and Interference edited by Pierre Degauque

20. High-Power Electromagnetics by R. L. Gardner
21. Interaction with and Protection of Complex Electrical Systems by C. Baum, P. Degauque, and M. Ianoz
22. Lasting Effects of Transients on Equipment Performance by Victor Scuka, Pierre Degauque, and B. Demoulin
23. Terrestrial and Planetary Electromagnetic Noise by M. Hayakawa
24. Extraterrestrial and Terrestrial Meteorologic-Electric Environment with Noise and Chaos by H. Kikuchi

Commission F: Wave Propagation and Remote Sensing edited by Richard K. Moore

- *26. Microwave Remote Sensing of Terrain by Roger H. Lang
27. Radar Backscattering in Meteorology by Leo P. Ligthart

28. Recent Propagation Studies for Land-Mobile Radio Communications by Mitsuhiro Mizuno, Eimatsu Moriyama, and Takeshi Manabe
29. Radar Views of the Ocean's Surface by R. Keith Raney
30. Research on Propagation Impairments to Satellite Communications by Ernest K. Smith and Warren L. Flock
- *31. Propagation at Microwave and Millimetre-Wave Wavelengths by Peter A. Watson

Commission G: Ionospheric Radio and Propagation edited by K. C. Yeh

32. A Review of Ionospheric Radio Techniques: Present Status and Recent Improvements by Robert D. Hunsucker
33. A Review of Ionospheric Structure and Modelling by S. A. Maurits and G. S. Ivanov-Kholodny
34. A Review of Ionospheric Radio Propagation by S. J. Franke

Commission H: Waves in Plasmas edited by Francois Lefevre

35. Nonlinear Wave Theories and Observations in Space by R. Pottelette and R. Treuman
36. Computer Experiments of Nonlinear Kinetic Processes in Space Plasma by H. Hoshino
37. Active Experiments in Space by R. Anderson
38. Electromagnetic Effects (Earth's Surface, Ionosphere, and Magnetosphere) Associated with Earthquakes by O. A. Molchanov
39. Nonlinear Resonance Effects Produced in the F Region by High-Power Radio Waves by F. T. Djuth
40. Computer Simulation of Magneto-Hydrodynamic Processes in Space Plasmas by M. Scholer
41. Electromagnetic and Electrostatic Cyclotron Waves in Magnetospheric and Laboratory Plasmas: Theory, Simulations, and Experiments by S. S. Sazhin
42. Whistlers and Particle Precipitation by M. Rycroft
43. Observations and Interpretations of Interplanetary and Planetary Wave Emissions by R. G. Stone and R. J. MacDowall

Commission J: Radio Astronomy edited by A. Tzioumis

- 44. A Review of Advances in VLBI Techniques by Alan E. E. Rogers
- 45. A Review of Pulsars by Simon Johnston and Matthew Bailes

Commission K: Electromagnetics in Biology and Medicine edited by Paolo Bernardi

- 47. Biophysical Mechanisms of Interaction by Stephen F. Cleary
- 48. Biological Effects of Electromagnetic Fields and Radiation by R. D. Saunders, N. A. Cridland, C. I. Kowalczyk, and Z. J. Sienkiewicz
- 49. Diagnostic Applications of Electromagnetic Fields by James C. Lin
- 50. Therapeutic Applications of Electromagnetic Fields by J. W. Hand and R. Cadossi
- 51. Human Exposure Assessment and Dosimetry by Lars-Erik Paulsson

24 February, 1993
W. ROSS STONE

RADIOENGINEERING

The first regular issue of that new periodical (Volume 1, No 1) came out in October 1992. "Radioengineering" is sponsored by the Radioelectronics Departments in Czech and Slovak Universities, and the URSI Committee in Czechoslovakia. The List of Contents mentions :

About departments :

- Department of Microelectronics, Technical University of Brno
- Department of Circuits Theory, Czech Technical University in Prague
- Research Projects, Department of Radioelectronics TU Brno, 1992

Papers :

- A new Version of the Microstrip-to-Waveguide Transition, J. Machác

- Calibrating the Six Port Reflectometer Using a Matched Load and Four Unity Reflection Standards - Part 1, V. Bilik
- Signal-Flow Graph Network Analysis, T. Dostál, J. Mikula
- An Acoustic Object Recognition System, J. Turán
- Multi-Step Numerical Laplace Inversion, D. Biolek

News :

- The 22nd European Microwave Conference and Workshop in Finland
- The 37th "Internationales Wissenschaftliches Kolloquium" and Workshop in Ilmenau
- 15th meeting of Departments of Radioelectronics of Electrical Engineering Faculties in the CSFR.

The second issue saw the light in December 1992, with the following contents :

Papers :

- Calibrating the Six-Port Reflectometer Using a Matched Load and Four Unity-Reflection Standards - Part 2, V. Bilik
- The Waveguide Behaviour of the Ballistic Carriers in Confined Quatum States, F. Urban, D.W.E. Allsopp, R. Redhammer
- An Adaptive Antenna Array With the Time Multiplexed Signal Processing, Z. Raida
- The directional Signal Filtering by Progressive Phasing, Z. Nováček
- Standard Time and Frequency, O. Buzek, J. Cermak

News :

- 6th International Scientific Conference at the Electrotechnical Faculty of the Technical University of Kosice
- New Journal Information; Applied Signal Processing, The International Journal of Digital and Analogue Signal Processing
- Index of Radioengineering in 1992

FROM THE ARCHIVES OF URSI

Bulletins of March to June 1953

These two Bulletins contained mainly routine matters, such as

- Data on European Ursigrams (monochromatic intensity of the solar corona, Es critical frequency, F2 critical frequency, terrestrial magnetism, ionospheric disturbance warning, radio solar emission observatories).
- CCIR-URSI cooperation : exchange of information for forecasts and warnings
- Comments on certain recommendations at the 1952 General Assembly, viz.
 - 56 : reservation of frequency for the study of extraterrestrial radio noise
 - 57 : production and reduction of ionospheric data
 - 59 : exchange of information for the preparation of short-term forecasts and the transmission of ionospheric disturbance warnings
 - 69 : prediction of solar index

The most interesting item is a letter from Prof. Woonton, Chairman of Commission VII (Radioelectronics, predecessor of our present Commission D). This Commission had been recently created, and was trying to define its identity and role within URSI. The main parts of the letter are worth quoting :

"Commission VII, Electronics, is a very new commission and cannot be said to have proved its value to URSI. In fact, in Australia, it was suggested that the 1954 meeting would be a test of its value and that if it were not shown to have the same international reason for existence as some of the other Commissions, it should be dissolved. My opinion is that Commission VII is valuable in so far as it is able to co-operate with the other Commissions by bringing to their attention fundamental advances in the physical basis of electronics. I base this suggestion on the fact that technique is common to all Commissions of URSI ; in example, members of the Commission on Ionospheric Propagation are probably more competent in the design of equipment and instruments for their measurements than we are to do it for them ; what they need from

us is information in fundamental advances that will permit them to design better instruments.

Reasoning from my statements in the previous paragraph, I have some suggestions concerning the topics to be covered at our 1954 meetings, but of course it is for us to decide jointly whether my statements are correct and what topics should be covered ; on these matters, I would like to have your opinions and comments.

If my opinion of the place of Commission VII in the URSI organization is correct, then we should co-operate with the other Commission. In Australia, the most successful and best attended meeting of Commission VII was one on Gas Discharges ; members from the Commission on Radio Astronomy found much that they could discuss with members from the Commission on Electronics. The one group were interested in the phenomena which they measured in space, the other group were interested in the fundamentals of the same phenomena when examined in the laboratory. I suggest that one of our meetings should be devoted to the phenomena of discharges in gases.

It has been suggested to me, by members of the commission on tropospheric propagation, that much is yet to be done in specifying the characteristics of Radar equipment for the measurement of rain, snow and cloud. I suggest that one of our meetings be devoted to a joint discussion between electronics and propagation people on the design of radars for scientific measurement.

The scientific literature seems to indicate that the future of electronics (and with it, instrumentation for all kinds of measurements) is being controlled by the development of materials rather than by the design of circuits. I suggest that we devote at least two meetings to the discussion of those topics from solid state physics which relate to electronics, for example to ferrites, to ferro-electric materials, to semi-conductors and to magnetic properties of materials in general. "

Bulletins of March to June 1963

These two Bulletins contain extensive information (34 pages) on the Ionospheric Programme, and Recommendations for the International Quiet Sun Year (IQSY). The main headings are : Vertical Incidence Sounding, Absorption Observations, Drift Observations, Atmospheric Radio Noise, Whistlers, Incoherent Scatter Sounding, Auroral Radar, Forward Scatter, Oblique incidence and Backscatter. There was also a note on the Constitution of the Inter-Union Committee on the

Ionosphere, chaired by E.V. Appleton, with representatives from I.A.U., I.G.G.U. and U.R.S.I. (W. Beynon, K. Maeda, J.A. Ratcliffe, T. Van Zandt). The most interesting item, however, was a historical document concerning the Proceedings of the First General Assembly of URSI. We quote :

"The first General Assembly of U.R.S.I. was held in Brussels, from July 24th to 28, 1922, under the chairmanship of General Ferrié, President of the Union. The Proceedings of this Assembly have never been published ; in order to complete the series of Volumes on General Assemblies it has been thought useful to give a short review of that first Assembly.

Were present :

from Belgium :

MM. De Donder, *Chairman*,
Philippon, Père Lucas.

from England :

Sir R. Glazebrook, *Chairman*,
MM. Admiral Jackson, Murray, Shaughnessy, Dye."

from France :

MM. General Ferrié, *Chairman*,
Baillaud, Abraham and Latour

from Italy :

M. Vanni, *Chairman*

from Norway :

MM. Engset, *Chairman*,
Gythfeldt

from U.S.A. :

MM. L.W. Austin, *Chairman*,
Alexanderson and Kennelly

and Dr. R.B. Goldschmidt, *Secretary General* of U.R.S.I.

Members of the Belgian National Committee attended the sessions.

The Assembly noted that four countries were adhering to the International Scientific Radiotelegraphy Union, namely Belgium, England, France and U.S.A. Moreover the adherence of Australia may be considered as a certainty ; the adherence of Italy was certain ; Mr. Engset, Norwegian delegate, had taken contacts with the interested agencies of his country, Spain had announced the constitution of a National Committee and, after the closing of the meeting, the Board

received a letter from Mr. Sakurai to announce the probable adherence of Japan.

The statutes of the Union were revised by the Assembly and the final text together with the English version were adopted.

As regards the membership of the Executive Committee, the Assembly wishing to show their thankfulness for the work carried out unanimously re-elected the previous Committee. Later on, and on the proposal of Mr. Engset, the Assembly elected Mr. Bjerknes as Vice-President provided the adherence of Norway and the agreement of the Norwegian scientist.

The Assembly decided to appoint four Commissions, namely :

- I. on Measurement Methods and Standardization, *Chairman* Prof. Abraham
- II. on Propagation, *Chairman* Dr. Austin
- III. on Atmospheric, *Chairman* Dr. Eccles
- IV. on Liaisons with Operators, Practioners and Amateurs, *Chairman* Prof. Vanni.

In accordance with the statutes the members of the Commissions were appointed by the General Assembly on the proposal of the Executive Committee (Appendix I) ; the Assembly also adopted rules of the Commissions to define inter alias their relations with the General Secretariat and with the National Committees.

The delegations attending the meeting gave a review of the works carried out or to be carried out in their respective countries (Appendix II) and during plenary Assembly or during preliminary sessions held by two Commissions, drafted a research programme for the future and adopted resolutions in order to pursue the research on a basis of international collaboration.

MEMBERSHIP OF THE COMMISSIONS

Commission I - *On Measurement Methods and Standardization*

Chairman : Abraham

Belgium : Henriot, Tricot, Corteil

England : Dye, Glazebrook, F.E. Smith or Murray

France : Abraham, Jouaust, Bethenod

Italy : Vanni, Vallauri

Norway : Vegard, Petersen
USA : Dellinger, Goldsmith

Commission II - *On Propagation*

Chairman : Austin

Belgium : Dedonder, Philippson
England : Howe, F.E. Smith or Murray
France : Mesny, Perot
Italy : Artom, Pession
Norway : Petersen, Engset, Gythfeldt
USA : Austin, Alexanderson, Taylor

Commission III - *On Atmospherics*

Chairman : Eccles

Belgium : Wibier, Jaumotte
England : Eccles
France : Gl. Ferrié, Rothe
Italy : Pession, Sacco, Dr de l'Observatoire de Monte Cassino
Norway : Bjerkens, Skolem, Devik
USA : Austin, Cl. Squier

Commission IV - *On Liaison with Operators, Practitioners and Amateurs*

Chairman : Vanni

Belgium : Goldschmidt, Père Lucas
England : Campbell, Swinton
France : Jullien, Brenot
Italy : Vanni, Bardeloni
Norway : Not yet designed
USA : Kennelly

List of Papers submitted at the first General Assembly of U.R.S.I.

- Note for contribution to discussion on absolute measurement of electromagnetic fields, W. H. Eccles.
- Communication du Prof. Vanni sur les travaux réalisés par les techniciens des établissements de l'Armée et de la Marine Italiennes.
- Radiation measurements of arc and valve at Stonehaven Wireless Telegraphy Station.
- Note sur les parasites atmosphériques et l'emploi de la radio-goniométrie, E. Rothe.
- Rapport sur les observations des signaux U.R.S.I. effectuées à Meudon, R. Mesny.

Bulletin of June 1973

Two main themes dominated this short Bulletin. The first one was the particularly difficult financial position of URSI in the early seventies, as expressed by the following excerpts :

"On the recommendation of the Finance Committee and the URSI Council at their meetings in Warsaw, reductions will be made in the expenditure on URSI publications during the period 1973-75.

In Circular Letter URSI-M212 dated 19 December 1972, Member Committees were invited to comment on the contents of the URSI Bulletin. The replies already received from Committees are being studied. Replies from other Committees and comments from readers in general will be welcome.

It is intended, in future, to reduce the length of articles and notices dealing with more specialized matters. A summary of the subject will be given together with an address from which further information can be obtained by those who are interested in receiving more detailed information."

"The Board noted that the further devaluation of the dollar in 1973 had invalidated the Budget for 1973-1975 approved by the URSI Assembly in 1972. Income from Member Committees and UNESCO grants will not change, since they are expressed in dollars. However, the expenditure, most of which relates to currencies which have not been devalued, will be greater when expressed in dollars. In order to cover the resulting deficit, it is proposed to use part of the URSI reserve funds and to invite Member Committees to make a small additional contribution in 1974-1975 pending a review of the situation at the 1975 Assembly. The President and the Treasurer will write to Member Committees giving more details about this problem."

A second theme was the possible reorganization of URSI, and its effect on the relations with other Unions. We note an article by K. Rawer, outgoing chairman of Commission III (on the Ionosphere) :

"Commission III has been largely divided on the question of reorganization since many of its members had been looking forward to a merging of URSI with, or its replacement by, other existing or new Unions. The decision of the Council (to continue URSI) is loyally accepted and it is recognized that this decision is probably right for URSI as a whole.

However, now that this decision has been taken, it should not be interpreted as an invitation to continue as before. As a consequence of the decision, it is felt that drastic changes are needed :

- (1) a change of the internal structure and working style of the Commissions,
- (2) better outside coordination
- (3) a re-engagement of URSi in responsibilities of its own which have not been exercised during the last decade.

The last point refers, in particular, to functions taken over by "special bodies" which had been created with the intention of forming new organizations. Since this latter possibility is now excluded, and since URSI has decided "to survive", it must necessarily take back its attributions.

Commission III has taken note of some pessimistic predictions which were expressed during the special meeting on reorganization in Warsaw. It hopes and feels that the predicted deterioration of the Union can be avoided; this can be achieved provided :

- (1) that the internal activity of URSI can be increased and maintained between Assemblies so as to attract a larger number of active scientists who should be allowed to cooperate with Working Groups as "correspondents";
- (2) that URSI stops the dismantling of its genuine attributions in favour of other bodies; instead URSI should (a) establish better coordination with other Unions and with COSPAR; (b) strongly defend the position that the Unions must not allow those responsibilities that they can themselves carry to be transferred to other bodies.

This policy is proposed to URSI as a whole and, with the cooperation of the incoming Chairman, it has been applied in Commission III

- (i) by devoting about half of the time at the 1969 and 1972 General Assemblies to 'workshop sessions';
- (ii) by creating several Working Groups for the period 1973-1975, each headed by a Chairman and a Vice-Chairman, comprising a limited number of members and an unlimited number of correspondents;

- (iii) by taking over the advisory and instructional functions formerly executed by the URSI-STP Committee (whose efficient activity is gratefully acknowledged);
- (iv) by being prepared to accept responsibilities in present and future coordinated inter-Union programmes.

In the same vein the Board of Officers, in its meeting of 29-30 March 1973, approved the following text :

Professor H.G. Booker (Vice-President) has been responsible, since 1972, for making contact with the Chairmen of Commissions III, IV and VIII with the intention of ensuring better coordination of the closely related activities of these Commissions (Rec. C.7 Warsaw 1972). The Board was concerned at the lack of progress made so far, but it expressed the opinion that it was desirable to think in terms of a single broadly-based URSI Commission in which emphasis would be on electromagnetic and hydro-magnetic wave propagation.

Several URSI-IUGG (IAGA) Inter-Union Working Groups are being set up to deal with particular scientific questions of interest to both URSI and IAGA.

Professor V.V. Migulin (Vice-President) has agreed to consult the Chairmen of Commissions I, II, V, VI and VII about future changes in the terms of reference of their Commissions and to preside over a meeting to discuss this question.

The possibility of forming a Commission to deal with the propagation of electromagnetic waves and the transmission of information in biological media is under consideration. Contacts will be established with the biological Unions before any recommendation is made.

Further consideration is being given to the introduction of a scheme for the adhesion to URSI of individual members.

Bulletin of March 1983

This Bulletin only contains matters of a routine nature.

PERSONALIA

Dr. L.P. Ligthart, Official Member of Commission F in the Netherlands, has been appointed Professor of Electrical Engineering at the Technical University of Delft, with responsibility for Microwave Transmission, Radar and Remote Sensing Technologies. Professor Ligthart gave his inaugural lecture on 9 December 1992, in front of a large audience where URSI was represented by Professor F.L.H.M. Stumpers, Honorary President of URSI, Professor F.W. Sluijter, President of the URSI Committee in the Netherlands, Professor G. Brussaard, Chair of Commission F, and the Secretary General.