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YVONNE HERBAYS
1898 - 1985

It is with great regret that we announce the death on 16 August 1985 of Mme Yvonne Herbays, widow of Colonel Ernest Herbays who was Secretary General of URSI from 1948 until his death in 1967. Mme Herbays was present at the URSI General Assemblies in Venice in 1938, and at all the subsequent Assemblies up to that in Munich in 1966. As the constant companion of her husband, she was known everywhere in URSI circles; her cheerful disposition was always appreciated by those with whom she came into contact, and was a welcome feature in the activities of the many Ladies' Committees in which she took part. In spite of her recent illness, she maintained her interest in URSI and kept in touch with members of the Secretariat in Brussels.

C.M. Minnis

THE THIRD WORLD ACADEMY OF SCIENCES

CONFERENCE ON SOUTH-SOUTH AND SOUTH-NORTH COOPERATION
IN SCIENCES (Trieste, 5 - 10 July 1985)

"All honour to science which explores the Universe and solves its mysteries. All honour to it as it examines the constitution of life. All honour to it as it elucidates the working of the mind-body organism. All honour to it as it seeks to alleviate pain. All honour to it as it enlarges the providence of the earth and all honour to it as it ensures better communications between human beings and societies".

With these words, the Secretary General of the United Nations, Mr. J. Pérez de Cuéllar, opened on 5 July 1985, the Conference on South-South and South-North Cooperation in Sciences in the Lecture Hall of the International Centre for Theoretical Physics (ICTP) of Trieste, Italy. This Conference was organized by the Third World Academy of Sciences, in order to bring together, for the first time ever, representatives of Science Academies and Research Councils of the Third World along with the representatives of Science Academies in Industrialized Countries, to discuss the problems of development of Sciences in the Third World and to examine various modalities of South-South and South-North collaboration in this regard. Participation was by invitation only.

The specific objectives of the Conference were as follows:

- To identify various science projects in which South-South and South-North cooperation is most profitable, and to examine possibilities of finding financial support for such projects.
- To strengthen cooperation among Science Academies and Research Councils of the South and to promote their role in the development of science in the Third World.
- To strengthen cooperation between Academies of the South and Academies of the North.
- To identify high-level scientific research performed by Third World scientists as a modality of South-North cooperation in the advancement of science.

After the speech of Mr. Pérez de Cuéllar, the first

Secretary General of the United Nations who ever came to Trieste, the President of the Third World Academy of Sciences (TWAS), Prof. Abdus Salam (Pakistan), Nobel Laureate for Physics and Director of the International Centre for Theoretical Physics (ICTP), gave the floor to Dr. Hans Blix, Director General of the International Atomic Energy Agency (IAEA), Prof. I. Kaddoura, Assistant Director General of UNESCO, Mr. A.R. Khane, Secretary General of UNIDO, Sir John Kendrew, President of ICSU and Prof. Fermin A. Bernasconi, Director General of the Intergovernmental Bureau for Informatics (IBI).

One of the most important achievements of the Conference was that participants shared the experience of others from different regions of the world, in a variety of local problems and in different environments. Much information was given by the UN Agencies, by the World Bank, Governmental Agencies in industrialized countries, by ICSU and other scientific unions and many other organizations and, in particular, on international scientific networks and on existing and proposed regional centres for science. Proposals in relation with the future role of the Third World Academy of Sciences was put forward by the African, Arab, Asian and Latin-American working groups. Other groups met and discussed the possible collaboration with TWAS in the framework of their scientific disciplines. The study groups covered the following: (a) agricultural, chemical, biochemical and nutritional sciences; (b) biological and medical sciences; (c) physical and mathematical sciences and (d) earth and environmental sciences. Their recommendations which all aim at building up science communities in developing countries, will be considered by TWAS.

The programme of lectures covered a wide range of subjects under the following headings: South-South Cooperation - Problems and Modalities; Modalities of South-South Cooperation through Academies and Science Councils for Developing Pure Science and Science in Application; the Role of International Organizations and Science Foundations in Building-up Science in the South; the Role of International Networks; the Role of existing Science Centres and Newly-proposed Ones; the Role of High-level Scientific Manpower in Developing Countries. Other lectures were held on science and culture, science, technology and development.

In his concluding remarks at the last session of the Conference, the President of TWAS, Professor Abdus Salam, invited the Academies and Research Councils of the South to persuade their Governments to value science, and the Academies of the

North to help their colleagues in the South in a purposeful manner. TWAS will do whatever it can possibly do within the limits of its financial resources.

The Conference was attended by 234 delegates from Academies and Research Councils from 63 countries.

PROGRAMME FOR THE SCOSTEP INTERNATIONAL PROJECT ON POLAR AND AURORAL DYNAMICS (PAD)

The SCOSTEP Council decided at its meeting at Graz in the summer of 1984 to sponsor an international project proposed by its Long-Range Planning Committee, called Polar and Auroral Dynamics (PAD). The project shall be carried out preferably in this decade.

The purpose of the International Project on Polar and Auroral Dynamics is to stimulate and support by suitable coordinating efforts international cooperation in the field of high latitude solar terrestrial physics within the magnetosphere of the Earth with emphasis on dynamical phenomena. Suitable international meetings or sessions of international conferences will also be organised for the presentation of results of the research effort.

The PAD project will be centered around some specially suitable satellite missions. The new spacecraft that will most directly contribute to PAD are the Swedish Viking in late 1985 to 1986, and Interball of USSR and EXOS-D of Japan in 1988-1991. In the period 1985-1986 there will be important data also from the existing DE, DMSP, ISEE and AMPTE spacecraft as well as from incoherent and coherent scatter radars, optical interferometers and other optical instruments, magnetometer chains, sounding rockets, balloons and regular observatory networks. In the late 1980's Interball and EXOS-D constitute the obvious main spacecraft projects for PAD. They may be supported by the American CREST satellite, measuring in the equatorial plane, as well as by DMSP satellites and possibly Viking and other spacecraft, some surviving from the first period. The ground based programmes in the late 1980's are expected to be of the same magnitude as in the middle of the decade, although they are not yet equally well known.

The Viking project will contain a large "real time" programme, with scientists interacting with the satellite data and other data more or less in real time during a number of "campaigns". A significant part of the scientific analysis will hopefully be defined and started up in those campaigns. Important contributions from ground based and other suborbital instruments will be organised.

All participation in PAD research will be based on cooperation between contributors, agreed by the individual researchers. For the Viking period of PAD special project scientists will assist scientists who are interested in establishing contacts for cooperative projects and they will also take initiatives to support cooperation. These special Viking scientists are Dr. Georg Gustafsson (Uppsala Ionospheric Observatory S-755 90 Uppsala, Sweden, telephone +46-(0)18-300020, telex 76036) and, for ground-based measurements, Dr. Risto Pellinen (Finnish Meteorological Institute, Ilmatieteen laitos, P.10503, SF-00 101 Helsinki 10, Finland, telephone 171922, telex 124436). For the Interball/EXOS-D period contact persons (project scientists) as well as the detailed actions by the Coordinating Committee remain to be worked out. The Coordinating Committee may also include other projects not yet defined. A newsletter will be distributed a few times per year.

The Coordinating Committee for PAD consists of one member from each of the three countries providing the main spacecraft Viking (Hultqvist), Interball (Sageev) and EXOS-D (Obayashi) and one American (Williams).

The STP Community at large is invited to join in this international scientific collaboration.

For the Coordinating Committee,

BENGT HULTQVIST
Kiruna Geophysical Institute
P.O.Box 704
S-981 27 Kiruna
Sweden,

NEWS FROM MEMBER COMMITTEES

PORTUGAL: THE RADIOTELESCOPE AT PORTO

An article entitled "The Radiotelescope of the University of Porto"⁺, by A.S. Magalhaes, has been received recently by the URSI Secretariat in Brussels. This article reports on the first radioastronomical experiments in Portugal. It describes the small radiotelescope for monochromatic solar flux density measurements installed at Porto and gives the main parameters of the instruments. Those wishing to obtain more information about these experiments should contact:

A.S. Magalhaes
Observatorio Astronomico
"Prof. Manuel de Barros"
Universidade do Porto
Porto, Portugal.

⁺ Reprinted from Anais da Faculdade de Ciencias do Porto,
Volume LXIII, Fascs 1° a 4°.

UNITED KINGDOM: 1985 URSI COLLOQUIUM

The British Committee for Radio Science held its second National URSI Meeting on 12 July 1985 at the Royal Society. The programme shown below aimed to cover all the activities of URSI Commissions by means of a review and a specialist presentation which in most cases was given by a younger research worker. In introducing the Event, Prof. Clarricoats explained that one of the objectives was to bring about a wider understanding of URSI within the UK, especially among young research workers.

Rather more than 100 persons attended and the day was judged a success. Similar Events are planned for 1986 (University of Birmingham) and 1987 (University of Sheffield).

PROGRAMME

- I. Introduction: Prof. P.J.B. Clarricoats (Queen Mary College, London; President, British Committee for Radio Science)
- II. Chairman: Sir Granville Beynon, CBE, FRS (University College of Wales, Aberystwyth; Honorary President of URSI)
- Ionospheric radio and propagation (Commission G)
- A Review, Dr. P.A. Bradley (Rutherford Appleton Laboratory, Chilton)
- Ionospheric plasma physics, Dr. T. Robinson (University of Leicester)
- Waves in plasmas (Commission H)
- A Review, Dr. D. Jones (British Antarctic Survey, Cambridge)
- Whistlers and vlf emissions (Dr. A.J. Smith (British Antarctic Survey, Sheffield)
- Radio astronomy (Commission J)
- A Review, Dr. J.E. Baldwin (University of Cambridge)
- Astronomy at sub-mm wavelengths: instrumentation and astrophysics, Dr. G. White (Queen Mary College)
- III. Chairman: Prof. P.J.B. Clarricoats
- Electromagnetic metrology (Commission A)
- A Review, Dr. O.C. Jones (National Physical Laboratory, Teddington)
- High-resolution laser interferometry applied to gravitational radiation detectors, Dr. Lorna Robertson (University of Glasgow)
- Fields and waves (Commission B)
- A Review, Prof. A.D. Olver (Queen Mary College, London)
- Phased array microwave hyperthermia, Dr. P. Cudd (University of Sheffield)
- Signals and systems (Commission C)
- A Review, Prof. P.A. Matthews (University of Leeds)
- Slow scan tv over 16 kbs satellite link, Mr. P. Wells (Royal Signals and Radar Establishment, Defford)

IV. Chairman: Prof. A.L. Cullen, FRS (University College London;
Vice-President of URSI)

Electronic and optical devices and applications (Commission D)

A Review on optical couplers, Prof. J. Carroll (University
of Cambridge)

Integrated optical polarizers, Mr. J. Bristow (University of
Glasgow)

Electromagnetic noise and interference (Commission E)

A Review, Dr. F. Horner (Egham; formerly Director Radio and
Space Research Station)

International cooperation in interference studies, Prof.
J.D. Parsons (University of Liverpool)

Remote sensing and wave propagation (Commission F)

A Review, Prof. E.D.R. Shearman (University of Birmingham)

Remote sensing of ocean waves in the Celtic Sea, Dr. Lucy
R. Wyatt (University of Birmingham).

UNITED STATES: STUDENT PRIZE PAPER COMPETITION

Prizes will be awarded for the three best papers presented
by graduate students at the National Radio Science Meeting in
Boulder, CO, 13-16 January 1986. The prizes will be provided
by the US Committee of the International Union of Radio Science
(URSI). From the papers submitted, three finalists will be
selected, who will present their papers during the National
Radio Science Meeting. Prizes will be awarded as follows:

First Prize: \$1000
Second Prize: \$ 500
Third Prize: \$ 250

In addition, to enable them to attend the meeting, travel
and subsistence expenses of the finalists will be defrayed by
the US Committee.

Papers must be received on or before 1 October 1985 by:

Prof. Sidney A. Bowhill
Department of Electrical Engineering
University of Illinois
Urbana, IL 61801, USA.

Questions regarding the competition should be addressed
to Professor Bowhill at the above address or at (217)333-4151.

LIGHTNING AND STATIC ELECTRICITY

The 10th International Aerospace and Ground Conference on Lightning and Static Electricity was held in Paris on 10-12 June 1985. It was associated with the XVII International Aeronautic Congress, and organized by the Association Aéronautique et Astronautique de France. It was cosponsored by the National Interagency Coordination Group (USA), the European Space Agency, the Société des Electriciens, des Electroniciens et des Radioélectriciens (France), URSI, and others.

About half of the 91 papers were devoted to the effect of lightning, NEMP and electrostatic discharges on air- and spacecraft, leading to a good and many-sided survey of the state of the art in this field. This started with the keynote address by Lerouge (Dassault, France), and had about 20 papers from USA, 10 from France, 4 from F.R. of Germany, and 3 from the United Kingdom. Numerous calculation and simulation results were presented, but also quite a few papers on in-flight measurements during thunderstorms, e.g. In-flight thunderstorm environmental measurements during the Landes 84 campaign (Laroche, France), Location of lightning strokes on aircraft in storm field (Gayet, et al., France), Airborne and ground electromagnetic field measurements (at low altitudes) (Rustan et al., USA), Research in lightning swept stroke attachment patterns and flight conditions with the NASA F 106 B airplane (Fisher et al., USA), E and H field measurements on the transall C 160 aircraft during lightning flashes (Moreau and Alliot, France).

The sessions on phenomenology and characteristics of lightning included 17 papers on ground measurements, modelization, triggered lightning. A new modal of lightning subsequent stroke (Hubert, France) was presented through a thorough study of one triggered event. Laroche et al. also characterized the triggered lightning flash. Kawasaki et al. (Japan) discussed the group velocity of lightning return strokes.

The design of, and measurements with, lightning simulators were covered by 9 papers. Fuel ignition hazards (3 papers), aircraft protection (10 papers), ground systems protection (9 papers) were the subjects of special sessions. We mention:

A twelve-year study of lightning stroke prevention systems (Carpenter and Drabkin, USA), and Lightning and logistics, Cape Canaveral-A proving ground for lightning research (Golub, USA).

Lightning locators of new designs were studied in USA (4 papers). Electrostatic discharges were studied in connection with volcanic eruptions and explosive tests, aircraft, spacecraft, and simple measurement instruments.

Sixty-eight papers were produced splendidly in a 512-page cloth bound book by "Les Editions de Physique" (B.P.112, 91944 Les Ulis Cedex, France) at 550 F. francs (23 papers were not available in time).

F.L.H.M. Stumpers

URSI SPONSORED MEETINGS IN THE FAR-EAST

The strong industrial expansion in the Asian-Pacific area results in an increased presence of URSI in this region. Two meetings, both within the province of Commission B, were organised recently, and are discussed below.

INTERNATIONAL SYMPOSIUM ON ANTENNAS AND PROPAGATION

20-22 August 1985, Kyoto, Japan

This meeting was sponsored by the Institute of Electronics and Communication Engineers of Japan, with cosponsorship by URSI and IEEE's Antennas and Propagation Society. The programme consisted of five parallel sessions, covering classical topics such as reflectors, random media, VLBI, scattering and diffraction, printed antennas, SAR and image processing, remote sensing of snow and subsurface, etc. The Steering Committee consisted of Prof. F. Ikegami (Chairman), Prof. S. Adachi (Vice-Chairman and Official Member of the Japanese URSI Committee in Commission B) and Dr. H. Yokoi.

The meeting was attended by 455 participants and 57 accompanying persons, representing 28 countries. The organization was perfect, as expected from our very efficient Japa-

nese colleagues: a delightful reception was offered; the meeting rooms were provided with double screens; the session Chairmen could count on the help of countless young assistants, and finally each author was presented with fifty copies of his paper. A memorable event.

J. Van Bladel

INTERNATIONAL SYMPOSIUM ON ANTENNAS AND EM THEORY

26-28 August 1985, Beijing, China

The Chinese Institute of Electronics (CIE) became a member of URSI in 1984. This Symposium is the first URSI-sponsored effort of the new Committee, through its Antenna Society, and co-sponsorship of CAST, the China Association for Science and Technology. The Chairman of the Symposium was Prof. Mao Yukuan, who gave the following opening address:

The Development of Antennas and EM Theory in China

"In the 30's and 40's only very few Chinese were working in the field of antennas and EM theory. Only after the founding of the People's Republic of China did the work on antennas and EM theory begin to flourish.

First research institutes and factories were established for radio equipments; they generally had their own antenna research or designing branch. Radio engineering departments were also established in many universities, together with a few research institutes devoted to the research of EM theory.

In the early 50's, war surplus of the Second World War were used to build some broadside arrays for radar. We then began to design various types of antennas such as conical scantracking antennas, Yagi arrays, etc. At the same time the propagation problems were tackled by many scientists. The underground antennas and their radiation and propagation properties were studied. In the early 60's, the research on mono-pulse antenna and phased array greatly enlarged the expertise of the antenna workers. By the mid sixties we were not far from world level in our efforts.

During the years of the so-called "Culture Revolution", many institutes and factories stopped working, and all universities ceased enrolling students. This period made devastating damage to our cause. Especially harmful is the notorious statement, made by Lin Biao after reviewing the so-called achievements of antennas, that "the knowledge of junior high graduates is enough for scientific research". But even at that time the antenna workers went on building many antennas which were of a new and advanced nature, such as the tropospheric scattering antennas, 25 m-diameter dual band monopulse radar antennas and its radome, phased arrays for long-range and three-dimensional use. We also worked on antennas for earth stations and radio astronomy.

After the end of this difficult ten-year period, the antenna and EM theory work in China began a new era. Despite the loss of time of the past years, we worked hard to catch up. First we organized many lectures on GTD and mm theory. We also invited many professors from abroad to give lectures in China. In addition large numbers of visiting scholars who studied abroad for two or three years have come back to us. In the near future we will have large numbers of graduates at the master and PhD level, and the academical level of our staff will be greatly improved.

In the 70's and before, the design of antennas was by cut-and-try methods. We spent much time in testing and tailoring the model antennas. Now, through various numerical methods and computer-aid design, we can design an antenna with more confidence. We can build, for example, antennas for all bands (up to mm band, high-tower long wave antennas for standard time signal (to centimeter band), 25 m diameter radiotelescope for deep space probing, Yagi and microstrip antennas. We have some very good outdoor test ranges, and a few compact ranges. Our earth station antennas were designed by G.O. shaping. The multimodes and corrugated horns were widely used by antenna designers.

The activities of the Antenna Society of CIE are centered on five subgroups: antenna theory, arrays, reflectors, linear and small antennas, and measuring techniques. We hold conferences twice a year, and we have a publication, the first issue of which can be obtained at the information desk!

Prof. J. Bach Andersen, Chairman of Commission B and co-Chairman of the Programme Committee (together with Prof. Yen

Lang) reports on the meeting as follows:

"This was the first major international meeting sponsored by URSI to take place in China. URSI Commission B played a role in the Technical Programme Committee, but all the organization was done by the Chinese, especially the Antenna Society of the Chinese Institute of Electronics and the Chinese Association of Science and Technology. The programme featured almost 200 presentations of which half was from outside China from 20 different countries. The opening ceremony was followed by plenary talks by Professors Felsen, Lo, Ishimaru, and Mao Yukuan, where the latter as the Conference Chairman gave an interesting overview of the development of antennas and EM theory in China over the years.

Twenty sessions contained new work on a variety of antennas, arrays, feeds, inverse scattering, electromagnetic theory to name a few. For the foreign participants it was of particular interest to meet and discuss with their Chinese colleagues. The general level of the contributions was high, especially noteworthy was the large number of eager and competent young scientists, who for the first time participated in an international scientific meeting. Of interest was also a poster session which included Chinese millimeter hardware and examples of commercial antenna products. The papers are available in a hardcover 850-page proceedings published by China Academic Publishers.

Needless to say, a traditional, magnificent Chinese banquet and visits to famous ancient sites like the Great Wall and the Forbidden City made the meeting even more interesting, and it was the general opinion of the foreign participants that this was the first but not the last meeting of this type in China."

The Secretary General of URSI, who was present, had a chance to meet the members of the URSI-CIE Committee and discuss plans for future operations. The names of the Committee members will appear in the December 1985 issue of the *URSI Information Bulletin*.

J. van Bladel

ANNOUNCEMENTS OF MEETINGS AND SYMPOSIA

INTERNATIONAL CONFERENCE ON OPTICAL AND MILLIMETER WAVE PROPAGATION AND SCATTERING IN THE ATMOSPHERE

This Conference will be held from 27 to 30 May 1986 in Florence, Italy. It is organised by the Department of Physics of the University of Florence and the Oregon Graduate Center, and sponsored by the University of Florence, the Fondazione Ugo Bordoni (Rome) and the IROE-CNR (Florence).

The Conference will address all aspects of the propagation and scattering of optical and millimeter waves in the atmosphere. The objective of the meeting is to bring together active researchers in the field from around the world and provide a forum for the presentation of the most recent research results and discoveries.

The programme will include invited review papers in selected topic areas but the main thrust of the meeting will be toward the exchange of recent research results. The organizers solicit particularly contributed papers on the following and related topics:

- Clear air propagation - scintillation, coherence speckle.
- Imaging - imaging through turbulence and turbidity.
- Micrometeorology - basic physics, generation and evolution of turbulence.
- Modeling - computer models, simulations, model experiments.
- Nonlinear propagation - absorption, thermal blooming, aerosol laser interaction.
- Remote measurement of atmospheric parameters - wind speed, pressure, temperature, humidity, strength and scales of turbulence.
- Scattering - scattering by aerosols, water droplets, rough surfaces; multiple scatter effects.
- Stochastic methods - propagation and scattering as stochastic processes.

Details regarding the submission of abstracts and summaries may be obtained from:

O.I.C./O.M.P.S.A.
Via Gustavo Modena 19
I-50121 Florence, Italy. Tel.(39-55) 57.72.71.

All abstracts and summaries must be received by 15 December 1985 and should be sent to:

Dr. Reginald J. Hill
Wave Propagation Laboratory, R/E/WP1
US Department of Commerce
325 Broadway
Boulder, CO 80303, USA.

8th ANNUAL MEETING OF THE BIOELECTROMAGNETICS
SOCIETY

The 8th Annual Meeting of the Bioelectromagnetics Society will be held from 1 to 5 June in Madison, Wisconsin, USA.

Original papers are being solicited, for presentation in English, either from the platform or via poster, on the interaction of electromagnetic energy (from zero hertz through the visible light frequencies) and of acoustic energy with biological systems. Areas of interest include, but are not limited to: Behavioral studies; Cellular and subcellular studies; Developmental studies; Diagnostic and therapeutic applications; Dosimetry; Electric and magnetic properties of biological materials; Endocrine studies; Exposure assessment; Exposure systems; Extremely low frequency field studies; Genetic studies; Hyperthermia; Instrumentation and measurement; Mechanisms of interaction; Physiological studies.

The Technical Programme Committee will be chaired by Maria A. Stuchly, Vice-President/President-Elect of BEMS.

The deadline for submission of abstracts is 10 January 1986. Authors wishing to present papers should request a form for submission of an abstract from:

The Bioelectromagnetics Society
1 Bank Street
Gaithersburg, Maryland 20878, USA.

Abstracts submitted by nonmembers must be sponsored by a Full Member of the Bioelectromagnetics Society.

ASIA-PACIFIC MICROWAVE CONFERENCE

The first Asia-Pacific Conference will be held in New Delhi, India from 24 to 28 February 1986. The Conference, which is organized jointly by the Department of Electronics and other national and international agencies, is intended to provide a forum for exchange of information related to R and D activities and applications of microwaves.

The first two days of the conference will be devoted to presentation of country reports giving the status of microwave R and D and applications and to organisational matters related to future conferences of this type. The subsequent three days will be devoted to technical sessions and a workshop.

The objectives of the Conference are: (a) to stimulate interest in, to spread knowledge of and to foster the development and application of microwave science and technology amongst countries of the Asia-Pacific region; (b) to encourage mutual collaboration amongst countries of the region in the field of microwaves.

The programme will cover the following topics: Biological, medical and industrial effects; Communication systems; Computer aided design; Field and network theory; High power devices and systems; Low noise techniques; Manufacturing methods; Measurement standards and calibration; Microwave acoustics; Microwave integrated circuits; Microwave remote sensing; Microwave tubes; Millimeter and submillimeter wave techniques; Passive components; Phased array techniques; Radar systems; Solid state devices and circuits.

For further information regarding the Asia-Pacific Microwave Conference contact:

Mr. O.P.N. Calla
Chairman, Technical Programme Committee
Asia-Pacific Microwave Conference
c/o Delhi Earth Station
SAC, I.S.R.O.
P. Box 5227
Sardar Patel Marg
New Delhi 110 021, India.
Telephone: 3015791
Telex: 31-65552 DES IN

1986 INTERNATIONAL IEEE A/P-S SYMPOSIUM
AND NATIONAL RADIO SCIENCE MEETING

The 1986 International Symposium, sponsored by the IEEE Antennas and Propagation Society and the National Radio Science Meeting, sponsored by the USNC/URSI Commissions A, B, E, F, and J, will be held jointly in Philadelphia, Pennsylvania, from 9 to 13 June. Authors are invited to submit papers on all topics of interest to the AP-S and URSI membership. The topics listed below are intended as suggestions; consideration will be given to papers on other subjects.

Suggested topics for AP-S

Aircraft and spacecraft antennas; Antenna systems; Antenna theory; Array analysis, design, and synthesis; Conformal antennas; Electromagnetic theory; Environmental effects on waves; HF techniques; Lens and horn antennas; Measurement techniques; Microstrip antennas; Millimeter-wave antennas and propagation; Numerical techniques; Phased arrays; Radomes; Reflector antennas and feeds; Remote sensing; Scattering and diffraction; Surface and underground antennas and waves; Transients; Wave propagation theory; Wideband antennas.

Special topics: Digital beamforming; Integrated antennas; Adaptive antennas; Propagation effects in microelectronic systems.

Suggested topics for URSI

Commission A: Time domain measurements; Microwave and millimeter wave measurements; EM measurements using satellites; Near field measurements.

Commission B: Analytic and numerical techniques; Effects of earth interface; High frequency asymptotic methods; Inverse scattering; Scattering and diffraction.

Commission E: Characterization and modeling of noise; Effects of noise on systems performance; Interference and its suppression.

Commission F: Radio Meteorology; Remote sensing; Tropospheric effects; Millimeter wave propagation.

Commission J (Radio Astronomy).

All summaries and abstracts must be received before 6 January 1986. Enquiries regarding the technical programme should be directed to the Chairman of the Technical Programme Committee:

Ali Afrashteh: IEEE AP-S and URSI Symposium
c/o IEEE Office
Moore School of Electrical Engineering
University of Pennsylvania
Philadelphia, PA 19104, USA.

Further information regarding the Symposium may be obtained from the General Chairman:

Charles C. Allen
General Electric Company
Valley Forge Space Center
Room U4018
P.O.Box 8555
Philadelphia, PA 19101, USA.

1986 CONFERENCE ON PRECISION ELECTROMAGNETIC MEASUREMENTS

CPEM '86 will be held from 23 to 27 June 1986 at the National Bureau of Standards, Gaithersburg, Maryland, USA.

Papers describing original work not previously published or presented covering the theory, design, performance, simulation, or application of electromagnetic standards, measurements, techniques, instruments or systems are sought for presentation.

Papers on absolute electrical measurements and the use of quantum phenomena as electrical standards, are especially sought in preparation for the meeting late in 1986 of the Comité Consultatif d'Electricité of the CIPM to decide on the adoption of international values for the constants $2e/h$ and h/e^2 for the definition of the volt and ohm respectively.

All papers concerned with electromagnetic measurements and standards and with related fundamental physics will be considered. Papers in the following fields are considered to be especially appropriate:

- EM-related fundamental constants and standards

- Direct current, low frequency, and RF
- Time, time interval, and frequency
- Antennas and fields
- Microwaves and millimeter waves
- Infrared, visible, and ultraviolet radiation
- Lasers
- Electro and fiber optics
- Cryoelectronics
- Automated measurements
- Technical calibration services.

Authors should request an author's kit for the submission of a summary (500 to 1000 words) and abstract (maximum 50 words). Summaries must be received on or before 1 February 1986 and should be sent to:

Mr. Norman B. Belecki
Technical Programme Chairman CPEM '86
National Bureau of Standards
B146 Metrology
Gaithersburg, MD 20899, USA.

For further general information contact:

Ms Judy Wilson
National Bureau of Standards
Gaithersburg, MD 20899, USA.
(301) 921-2721

The Conference on Precision Electromagnetic Measurements is sponsored by the US National Bureau of Standards, the IEEE Instrumentation and Measurement Society and the International Union of Radio Science.

INTERNATIONAL CONFERENCE ON COMMUNICATIONS '86

This Conference will be held from 22 to 25 June 1986 at the Sheraton Centre, Toronto, Canada. It is sponsored by the IEEE Communications Society and the IEEE Toronto Section. The theme of the Conference is "Integrating the World through Communications". There will be also two mini-themes as follows: "Worldwide Communications Networks" and "Communications with Remote Areas".

For further information contact:

Prof. A.N. Venetsanopoulos
Technical Programme Committee Chairman
IEEE International Conference on
Communications '86
1450 Don Mills Road
Don Mills, Ontario, Canada M3B 2X7.

INTERNATIONAL SYMPOSIUM ON SURFACE WAVES IN SOLIDS
AND LAYERED STRUCTURES (ISSWAS)

The International Symposium on Surface Waves in Solids and Layered Structures will be held from 1 to 4 July 1986 in Novosibirsk, USSR. It is organised by the Institute of Semiconductor Physics of the Siberian Branch of the USSR Academy of Sciences, in cooperation with the Institute of Radio Engineering and Electronics and the Department of General Physics and Astronomy of the USSR Academy of Sciences. It is co-sponsored by URSI and the European Physical Society.

The goal of this Symposium is the presentation and discussion of the latest achievements in the field of physics of wave processes on surface of solids and related applied research in metrics and functional electronics.

The scientific programme will include the following topics:

- Existence and propagation of surface waves in solids and layered structures
- Wave interaction, multiwave processes
- Waves in periodic structures on the surface and on the boundary
- Acousto-optical interactions in layered structures
- Surface waves in quasi-two-dimensional electronic structures
- Spin waves
- Spectroscopy by means of surface waves
- Materials for acousto-electronics, acousto-optics and magneto-electronics.

The languages of the Symposium will be English and Russian, and the programme will include plenary reports and contributed

papers. The deadline for the submission of papers is 31 December 1985.

All correspondence regarding the Symposium should be addressed to:

ISSWAS Organizing Committee
Institute of Semiconductor Physics
Siberian Branch of the USSR Academy of Sciences
Prospekt Lavrentyeva 13
630090 Novosibirsk 90
USSR.

Telephone: 35-75-78.

SYNOPSIS OF THE SOLAR MAXIMUM ANALYSIS

This Symposium will be held in Toulouse, France, from 2 to 5 July 1986. It is intended to be the 'Grand Finale' of the Solar Maximum Year (SMY, 1979-1981). The Symposium aims at summarizing, and particularly synthesizing the highlights of the data collected during the SMY and of the subsequent years devoted to the analyses of these data.

The Toulouse Symposium will discuss the key aspects of solar flares and of their coronal and interplanetary consequences and will search for the physical explanation of phenomena such as the pre-flare excitations and precursors, the energy build-up of flares, the impulsive and gradual phases, the post-flare effects and the consequent interplanetary phenomena.

On each of four days of the Symposium one or two aspects of flares will be discussed in three review papers, followed by contributed papers and posters, terminating with a general review and general discussions during which the present state of knowledge on that particular aspect of the flares will be assessed and the expected future research and development will be outlined.

The Organizing Committee of the Symposium consists of the Steering Committee of the Solar Maximum Analysis Programme. (Chairman: C. de Jager; Secretary: P. Simon).

The following general topics are included in the programme:

- Flare build-up; precursors and onset; magnetic shear and reconnection.
- The impulsive phase; energy release processes.
- The gradual phase; recovery, recurrences.
- Coronal and interplanetary phenomena.

Call for papers

Persons who want to present a contributed paper to the Symposium are invited to submit title and abstract (one sheet) before 1 February 1986 to:

Prof. C. de Jager
Laboratory for Space Research
Beneluxlaan 21
3527 HS Utrecht, The Netherlands

with copy to:

Dr. P. Simon
Observatoire de Paris
Section d'Astrophysique
Place J. Janssen
92195 Meudon Principal Cedex, France

and

Mr. Z. Niemirowicz
COSPAR Secretariat
51 blvd de Montmorency
75016 Paris, France.

INTERNATIONAL CONFERENCE ON SEMICONDUCTOR
AND INTEGRATED CIRCUIT TECHNOLOGY

This Conference will be held in the new Xiyuan Hotel, which is located near Peking and Tsing-Hua Universities, over a seven-day period beginning in the week of 19 October 1986. It is organised by the Chinese Institute of Electronics and the Continuing Education in Engineering of the University of California at Berkeley.

The Conference will provide an international forum on semiconductor and integrated circuit technology. The technical focus will be on a broad review of materials and processing issues associated with the fabrication of semiconductor and IC devices. The Beijing location will provide an important opportunity to establish contacts with a large number of Chinese scientists and technologists.

The Conference Committee includes Zheng Wenhao (Chinese Institute of Electronics), Yu Zhongyu (Ministry of Electronic Industries, China), Wang Yang Yuan (Beijing University), Takuo Sugano (Tokyo University), M. Strathman (Charles Evans & Associates), Nathan Cheung (University of California, Berkeley) and J. Stimmell (National semiconductor).

Papers are solicited on the following topics: Lithography; Ion implantation; Diffusion/oxidation; Si materials; Rapid thermal processing; Thin-film deposition; Amorphous Si; MOS technology; Bipolar technology; IC circuit design; Yield/reliability; Etching; Packaging; Process characterization; Materials characterization; Clean-room technology; Electronic-grade chemicals; High-purity water; Toxic-materials handling; Fab safety and maintenance; Education and training; Fab management; Superconductor electronics.

Prospective authors are invited to submit an abstract (100 words) before 15 November 1985.

For further information contact:

Zhou Mengqi
The Chinese Institute of Electronics
P.O. Box 139
Beijing
China.

11TH IEEE INTERNATIONAL CONFERENCE ON

INFRARED AND MILLIMETER WAVES

The 11th IEEE International Conference will be held at the Hotel Continental-Pisa, Tirrenia (Italy) from 20 to 24 October 1986. The Conference will cover progresses in all aspects of infrared and millimeter waves; a non-limitative list of main subjects includes the following topics:

- Laser sources (gas discharge lasers, optically pumped lasers, free electron lasers, solid state devices);
- Detectors, receivers, mixers;
- Millimeter and submillimeter sources;
- High resolution atomic and molecular spectroscopy;
- Spectroscopy of solids and liquids;
- Spectroscopic techniques (interference spectroscopy, laser spectroscopy, heterodyne spectroscopy, optical components Fourier transform);
- Astronomy, astrophysics and atmospheric physics;
- Plasma interactions and diagnostics;
- Technical, industrial and cross disciplinary applications.

Time schedule:

Second circular: 30 October 1985

Deadline for abstract submission: 30 January 1986

Third circular: 31 March 1986

Final registration and paper submission: 31 May 1986.

Further information may be obtained from the Conference Co-Chairmen:

M. Inguscio and F. Strumia
Dipartimento di Fisica dell'Universita di Pisa
Piazza Torricelli 2
I-56100 Pisa, Italy.
Telephone: 050/45222
Telex: PSAFIS 500319.

INTERNATIONAL GEOPHYSICAL CALENDAR 1986

The International Ursigram and World Days Service (IUWDS) is a permanent scientific service of the International Union of Radio Science (URSI), with the participation of the International Astronomical Union and the International Union of Geodesy and Geophysics. It adheres to the Federation of Astronomical and Geophysical Services (FAGS) of the International Council of Scientific Unions (ICSU). The IUWDS coordinates the international aspects of the world days programme and rapid data interchange. One of its tasks is the annual publication of the *International Geophysical Calendar*.

The Calendar reproduced on pp. 28 and 29 continues the series begun for the IGY 1957-58, and is issued annually to recommend dates for solar and geophysical observations which cannot be carried out continuously. Thus, the amount of observational data in existence tends to be larger on Calendar days. The recommendations on data reduction and especially the flow of data to *World Data Centers* (WDCs) in many instances emphasize Calendar days. The Calendar is prepared by the IUWDS with the advice of spokesmen for the various scientific disciplines. For greater detail concerning explanations or recommendations, attention is called to information published periodically in *IAGA News*, *IUGG Chronicle*, *URSI Information Bulletin* or other scientific journals.

The definition of the designated days remain as described on previous Calendars. *Universal Time* (UT) is the standard time for all world days. *Regular Geophysical Days* (RGD) are each Wednesday. *Regular World Days* (RWD) are three consecutive days each month (always Tuesday, Wednesday and Thursday) near the middle of the month). *Priority Regular World Days* (PRWD) are the RWD which fall on Wednesdays. *Quarterly World Days* (QWD) are one day each quarter and are the PRWD which fall in the *World Geophysical Intervals* (WGI). The WGI are fourteen consecutive days in each season, beginning on Monday of the selected month, and normally shift from year to year. In 1986 the WGI will be March, June, September and December.

The *Solar Eclipses* are: April 9 (partial -- maximum magnitude 0.82) covering about half of the Antarctic, moving across the south part of New Zealand, across Australia, the

International Geophysical Calendar 1986

| | S | M | T | W | T | F | S | | S | M | T | W | T | F | S | |
|----------|----|----|-----------------|-----------------|-----------------|-----------------|----|--|----|----|-----------------|------------------|------------------|-----------------|----|-----------|
| | | | | 1 | 2 | 3 | 4 | | | | | 1 | 2 | 3 | 4 | 5 |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | 6 | 7 | 8 | 9 ⁺⁺ | 10 ⁺⁺ | 11 | 12 | |
| JANUARY | 12 | 13 | 14 ⁺ | 15 ⁺ | 16 ⁺ | 17 ⁺ | 18 | | 13 | 14 | 15 | 16 | 17 | 18 | 19 | JULY |
| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| | 26 | 27 | 28 | 29 | 30 | 31 | 1 | | 27 | 28 | 29 | 30 | 31 | 1 | 2 | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| FEBRUARY | 9 | 10 | 11 [*] | 12 [*] | 13 | 14 | 15 | | 10 | 11 | 12 | 13 | 14 | 15 | 16 | AUGUST |
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 1 | | 24 | 25 | 26 | 27 ⁺⁺ | 28 ⁺⁺ | 29 | 30 | |
| | 2 | 3 | 4 | 5 ⁺ | 6 ⁺ | 7 | 8 | | 31 | 1 | 2 | 3 | 4 | 5 | 6 | |
| MARCH | 9 | 10 | 11 [*] | 12 [*] | 13 | 14 | 15 | | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | 14 | 15 | 16 | 17 | 18 | 19 | 20 | SEPTEMBER |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | 21 | 22 | 23 ⁺ | 24 ⁺⁺ | 25 ⁺⁺ | 26 ⁺ | 27 | |
| | 30 | 31 | 1 ⁺ | 2 ⁺ | 3 ⁺ | 4 ⁺ | 5 | | 28 | 29 | 30 | 1 | 2 | 3 | 4 | |
| | 6 | 7 | 8 [*] | 9 [*] | 10 | 11 | 12 | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| APRIL | 13 | 14 | 15 | 16 | 17 | 18 | 19 | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | OCTOBER |
| | 20 | 21 | 22 | 23 | 24 | 25 | 26 | | 19 | 20 | 21 | 22 | 23 | 24 | 25 | |
| | 27 | 28 | 29 | 30 | 1 | 2 | 3 | | 26 | 27 | 28 | 29 ⁺⁺ | 30 ⁺⁺ | 31 | 1 | |

| | | | | | | | |
|------|----|----|----|-----------------|-----------------|----|----|
| | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| JUNE | 1 | 2 | 3 | 4 ⁺⁺ | 5 ⁺⁺ | 6 | 7 |
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| | 29 | 30 | | | | | |
| | S | M | T | W | T | F | S |

| | | | | | | | |
|--|----|----|----|-----------------|-----------------|----|----|
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| | 23 | 24 | 25 | 26* | 27* | 28 | 29 |
| | 30 | 1 | 2 | 3 | 4 | 5 | 6 |
| | 7 | 8 | 9 | 10 ⁺ | 11 ⁺ | 12 | 13 |
| | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| | 21 | 22 | 23 | 24 | 25* | 26 | 27 |
| | 28 | 29 | 30 | 31 | 1 | 2 | 3 |
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | 25 | 26 | 27 | 28** | 29** | 30 | 31 |
| | S | M | T | W | T | F | S |

NOVEMBER

DECEMBER

1987
JANUARY

- ⑭ Regular World Day (RWD)
- ⑮ Priority Regular World Day (PRWD)
- ⑫ Quarterly World Day (QWD)
also a PRWD and RWD
- ⑤ Regular Geophysical Day (RGD)
- ③ ④ World Geophysical Interval (WGI)
- 14⁺ Incoherent Scatter Coordinated
Observation Day and Coordinated
Tidal Observation Day

- ⑨ Day of Solar Eclipse
- ⑨ ⑩ Airglow and Aurora Period
- 11* Dark Moon Geophysical Day (DMGD)

NOTES:

1. Days with unusual meteor shower activity are: Northern Hemisphere Jan 3,4; Apr 21-23; May 3-5; Jun 8-12; Jul 27-29; Aug 10-14; Oct 19-23; Nov 2-4, 17-18; Dec 12-16, 21-23, 1986; Jan 3,4, 1987. Southern Hemisphere May 3-5; Jun 8-12; Jul 26-30; Oct 19-23; Nov 2-4, 17-18; Dec 5-7, 12-16, 1986.
2. Study of Traveling Interplanetary Phenomena (STIP) Interval XIX: March 1986 International Halley Watch
Revised STIP dates: STIP XV 12-21 Feb 1984; STIP XVI 20 April - 4 May 1984; STIP XVII 15 May - 30 June 1985; and STIP XVIII September 1985.
3. Middle Atmosphere Cooperation (MAC) begins 1 Jan 1986 and runs through 1988.
4. Day intervals that IMP 8 satellite is in the solar wind (begin and end days are generally partial days): 1985 Dec 29-1986 Jan 6; Jan 11-19, 24-31; Feb 6-13, 18-26; Mar 3-10, 15-23 and 28-Apr 4; Apr 9-17, 22-30; May 5-13, 18-25, 30-Jun 7; Jun 11-19, 23-Jul 2; Jul 6-15, 18-27, 31-Aug 8; Aug 13-21, 26-Sep 3; Sep 7-15, 20-28; Oct 3-10, 15-22, 28-Nov 3; Nov 10-16, 22-29; Dec 5-12, 18-25, 31-1987 Jan 6.
There will not be total IMP 8 data monitoring coverage during these intervals.
(Information kindly provided by the WDC-A for Rockets and Satellites, Greenbelt, MD U.S.A.).
5. + Incoherent Scatter programs start at 1600 UT on the first day of the intervals indicated, and end at 1600 UT on the last day of the intervals.

eastern part of Indonesia and most of New Guinea (maximum eclipse path includes the South Magnetic Pole area in Antarctica, Macquarie Island, the south part of New Zealand, the eastern part of Australia and the eastern part of New Guinea); October 3 (annular-total) beginning in the extreme eastern USSR, moving across arctic regions, Greenland, Iceland, and across N. America except the extreme SW, across Central America and the Caribbean Sea, and ending in Colombia, Venezuela, Guyana, Surinam, French Guinea and northern Brazil (maximum eclipse (about 0.3 seconds) path in eastern USSR, Alaska, eastern Greenland and Iceland with the Sun only 5 degrees in altitude).

Meteor Showers (selected by P.M. Millman, Ottawa) include important visual showers and also unusual showers observable mainly by radio and radar techniques. The dates for Northern Hemisphere meteor showers are: Jan 3, 4; Apr 21-23; May 3-5; Jun 8-12; Jul 27-29; Aug 10-14; Oct 19-23; Nov 2-4, 17-18; Dec 12-16; 21-23, 1986; and Jan 3, 4 1987. The dates for Southern Hemisphere meteor showers are: May 3-5; Jun 8-12; Jul 26-30; Oct 19-23; Nov 2-4, 17-18; and Dec 5-7, 12-16, 1986. Note that the meteor showers that come in the first week of May and the third week in October are of particular interest (fragments of Halley's comet) because of the approach of Halley's comet in 1986. Especially note Halley's comet approach (Perihelion Feb 9 at 0.59 AU) and STIP Interval XIX March 1986 -- International Halley Watch.

The occurrence of unusual solar or geophysical conditions is announced or forecast by the IUWDS through various types of geophysical "Alerts" (which are widely distributed by telegram and radio broadcast on a current schedule). *Stratospheric warmings* (STRATWARM) are also designated. The meteorological telecommunications network coordinated by WMO carries these worldwide Alerts once daily soon after 0400 UT. For definitions of Alerts see IUWDS *Synoptic Codes for Solar and Geophysical Data*, Third Revised Edition 1973 and its amendments. *Retro-spective World Intervals* are selected and announced by MONSEE and elsewhere to provide additional analyzed data for particular events studied in the ICSU Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) programmes.

RECOMMENDED SCIENTIFIC PROGRAMMES
PLANNING EDITION

Note The following material was reviewed in 1985 by spokesmen of IAGA, WMO and URSI as suitable for coordinated geophysical programmes in 1986.

Airglow and Aurora Phenomena. Airglow and auroral observatories operate with their full capacity around the New Moon periods. However, for progress in understanding the mechanisms of inter alia, low latitude aurora, the coordinated use of all available techniques, optical and radio, from the ground and in space is required. Thus, for the airglow and aurora 7-day periods on the Calendar, ionosonde, incoherent scatter, special satellite or balloon observations, etc., are especially encouraged. Periods of approximately one week duration centered on the New Moon are proposed for high resolution of ionospheric, auroral and magnetospheric observations at high latitudes during northern winter.

Atmospheric Electricity. Not-continuous measurements and data reduction for continuous measurements of atmospheric electric current density, field, conductivities, space charges, ion number densities, ionosphere potentials, condensation nuclei, etc.; both at ground as well as with radiosondes, aircraft, rockets; should be done with first priority on the RGD each Wednesday, beginning on 1 January 1986 at 1800 UT, 8 January at 0000 UT, 15 January at 0600 UT, 22 January at 1200 UT, etc. (beginning hour shifts six hours each week, but is always on Wednesday). Minimum programme is at the same time on PRWD beginning with 15 January at 0000 UT. Data reduction for continuous measurements should be extended, if possible, to cover at least the full RGD including, in addition, at least 6 hours prior to indicated beginning time. Measurements prohibited by bad weather should be done 24 hours later. Results on sferics and ELF are wanted with first priority for the same hours, short-period measurements centered around the minutes 35-50 of the hours indicated. *Priority Weeks* are the weeks which contain a PRWD; minimum priority weeks are the ones with a QWD. The World Data Centre for Atmospheric Electricity (7 Karbysheva Leningrad 194018, USSR) is the collection point for data and information on measurements.

Geomagnetic Phenomena. It has always been a leading principle for geomagnetic observatories that operations should be

as continuous as possible and the great majority of stations undertake the same programme without regard to the Calendar.

Stations equipped for making magnetic observations, but which cannot carry out such observations and reductions on a continuous schedule are encouraged to carry out such work at least on RWD (and during times of MAGSTORM Alert).

Ionospheric Phenomena. Special attention is continuing on particular events which cannot be forecast in advance with reasonable certainty. These will be identified by Retrospective World Intervals. The importance of obtaining full observational coverage is therefore stressed even if it is possible to analyze the detailed data only for the chosen events. In the case of vertical incidence sounding, the need to obtain quarter-hourly ionograms at as many stations as possible is particularly stressed and takes priority over recommendation (a) below when both are not practical.

For the vertical incidence (VI) sounding programme, the summary recommendations are: (a) all stations should make soundings at least every quarter hour. Stations which normally record at every quarter should, if possible, record more frequently on RWDs, particularly at high latitudes; (b) all stations are encouraged to make f-plots on RWDs; f-plots should be made for high latitude stations, and for so-called "representative" stations at lower latitudes for all days (i.e. including RWDs and WGIs) (Continuous records of ionospheric parameters are acceptable in place of f-plots at temperate and low latitude stations); (c) copies of hourly ionograms with appropriate scales for QWDs are to be sent to WDCs; (d) stations in the eclipse zone and its conjugate area should take continuous observations on solar eclipse days and special observations on adjacent days. See also recommendations under *Airglow and Aurora Phenomena*.

For the incoherent scatter observation programme, every effort should be made to obtain measurements at least on the *Incoherent Scatter Coordinated Observation Days*, and intensive series should be attempted whenever possible in WGIs or the *Airglow and Aurora Periods*. The need for collateral VI observations with not more than quarter-hourly spacing at least during all observation periods is stressed. Dr. V. Wickwar (SRI International, 333 Ravenswood Ave., Menlo Park, CA 94025, USA), URSI Working Group G/H.1, is coordinating special programmes.

For the ionospheric drift or wind measurement by the various radio techniques, observations are recommended to be concentrated on the weeks including RWDs.

For travelling ionosphere disturbances propose special periods for coordinated measurements of gravity waves induced by magnetospheric activity, probably on selected PRWD and RWD.

For the ionospheric absorption programme half-hourly observations are made at least on all RWDs and half-hourly tabulations sent to WDCs. Observations should be continuous on solar eclipse days for stations in eclipse zone and in its conjugate area. Special efforts should be made to obtain daily absorption measurements at temperate latitude stations during the period of Absorption Winter Anomaly, particularly on days of abnormally high or abnormally low absorption (approximately October-March, Northern Hemisphere; April-September, Southern Hemisphere).

For back-scatter and forward-scatter programmes, observations should be made and analyzed on all RWDs at least.

For synoptic observations of mesospheric (D region) electron densities, several groups have agreed on using the RGD for the hours around noon.

For ELF noise measurement involving the Earth-ionosphere cavity resonances any special effort should be concentrated during the WGIs.

It is recommended that more intensive observations in all programmes be considered on days of unusual meteor activity.

Meteorology. Particular efforts should be made to carry out an intensified programme on the RGD -- each Wednesday, UT. A desirable goal would be the scheduling of meteorological rocketsondes, ozone sondes and radiometer sondes on these days, together with maximum-altitude rawinsonde ascents at both 0000 and 1200 UT.

During WGI and STRATWARM Alert Intervals, intensified programmes are also desirable, preferably by the implementation of RGD-type programmes (see above) on Mondays and Fridays, as well as on Wednesdays.

Middle Atmosphere Cooperation (MAC). MAC runs from 1 January 1986 through 1988. Techniques for observing the middle atmosphere should concentrate or center their observations on the RGDs, PRWDs, and QWDs. It is recommended that observing

runs for studies of planetary waves and tides be at least 10 days centered on the PRWDs and QWDs. Non-continuous studies of stratospheric warmings and the effects of geomagnetic activity on the middle atmosphere must be initiated by STRATWARM and MAGSTORM alerts, respectively. For more details see the "Recommended Scientific Programmes" on the reverse of the *Middle Atmosphere Dynamics Calendar* for 1986, which will be published as a special edition of the IGC for 1986.

Solar Phenomena. Observatories making specialized studies of solar phenomena, particularly using new or complex techniques, such that continuous observation or reporting is impractical, are requested to make special efforts to provide to WDCs data for solar eclipse days, RWDs and during *Proton/Flare Alerts*. The attention of those recording solar noise spectra, solar magnetic fields and doing specialized optical studies is particularly drawn to this recommendation.

Study of Travelling Interplanetary Phenomena (STIP). STIP Interval XIX is March 1986 to coincide with the International Halley Watch. Coordination of solar, interplanetary, and cometary activity is particularly desired. Revised STIP Intervals: STIP XV 12-21 Feb 1984 solar GLE; STIP XVI 20 Apr - 4 May 1984 Forbush decrease; STIP XVII 15 May - 30 Jun 1985 alignment of Venus magnetotail with satellites VEGA 1, VEGA 2, MS-T5, PVO and ICE; STIP XVIII Sep 1985 Giacobini-Zinner Comet fly-by by ICE.

Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy. Experimenters should take into account that observational effort in other disciplines tends to be intensified on the days marked on the Calendar, and schedule balloon and rocket experiments accordingly if there are no other geophysical reasons for choice. In particular it is desirable to make rocket measurements of ionospheric characteristics on the same day at as many locations as possible; where feasible, experimenters should endeavour to launch rockets to monitor at least normal conditions on the *Quarterly World Days (QWD)* or on RWDs, since these are also days when there will be maximum support from ground observations. Also, special efforts should be made to assure recording of telemetry on QWD and *Airglow and Aurora Periods* of experiments on satellites and of experiments on spacecraft in orbit around the Sun.

For URSI/IAGA Coordinated Tidal Observations Programme (CTOP) contact Dr. R.G. Roper (School of Geophysical Sci., Georgia Institute of Tech., Atlanta, GA 30332, USA) for the

1986 Calendar.

This Calendar for 1986 has been drawn up by H.E. Coffey, of the IUWDS Steering Committee, in association with spokesmen for the various scientific disciplines in SCOSTEP, IAGA and URSI. It is being published with the financial assistance of ICSU and UNESCO.

Copies are available upon request to IUWDS Chairman, Dr.P. Simon (Ursigrammes, Observatoire, 92190 Meudon, France), or IUWDS Secretary for World Days, Miss H.E. Coffey (WDC-A for Solar-Terrestrial Physics, NOAA, E/GC2, 325 Broadway, Boulder, Colorado 80303, USA),

BOOKS PUBLISHED BY URSI PERSONALITIES

J. VAN BLADEL (Secretary General, URSI)

Electromagnetic Fields: Revised Printing

Hemisphere Publishing Corporation, 556 pages, 0-89116-420-0, 1985.

Outside North America: Springer-Verlag GmbH, Berlin.

H. MATSUMOTO (Vice-Chairman, URSI Commission H) and T. SATO

Computer Simulation of Space Plasmas

Advances in Earth and Planetary Sciences, 385 pages, ISBN 90-277-1952-7, 1985.

URSI-IPS CONFERENCE ON THE IONOSPHERE AND RADIO WAVE PROPAGATION: PROCEEDINGS

The URSI-IPS Conference on the Ionosphere and Radio Wave Propagation was the third conference on ionospheric physics and its applications organized by the Ionospheric Prediction Service in Sydney, and the first to enjoy international sponsorship and participation.

The Proceedings of the Conference have been edited by D.G. Cole and L.F. McNamara, and published as IPS Radio and Space Services Technical Report (Doc.No:IPS-TR-85-04). They include all invited reviews and contributed papers presented at the Conference, except where only the abstracts were available for some reason. A synopsis of an open discussion on "Progress in Ionospheric Physics" is presented in these Proceedings by Dr. P.L. Dyson.

Information about the availability of the Proceedings may be obtained from:

IPS Radio and Space Services
P.O.Box 702
Darlinghurst N.S.W. 2010
Australia.

NAMES AND ADDRESSES OF URSI OFFICERS
AND OFFICERS OF MEMBER COMMITTEES
CORRIGENDUM

1. Attention is called on a misprint on page 26 of *URSI Information Bulletin*, No 233 (June 1985):

Dr. T. Stockflet Jørgensen is President of the URSI Committee in Denmark and not in Sweden as erroneously indicated.

2. The following change of address will be valid until approximately 1 August 1986:

Prof. J. Bach Andersen
University of Arizona
Health Sciences Center
Radiation Oncology Division
Tucson, Arizona 85724
USA.

Telephone: (602) 626-6722

3. Prof. S. Okamura, Vice-President of URSI, quitted the Japan Society for Promotion of Science. His address is now as follows:

Prof. S. Okamura
4-12-15, Numabukuro
Nakano-ku, Tokyo 165
Japan.

