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GARNET ALEXANDER WOONTON  
1906-1980

Garnet Alexander Woonton, Professor Emeritus of Physics at two Canadian Universities (McGill University in Montreal and the University of Western Ontario in London, Ontario) died recently in his 74th year.

It was at the 10th General Assembly of URSI in Sydney, an Assembly noted for the number of lasting friendships it established, that Professor Woonton became Chairman of Commission VII (Radio Electronics) and he was named later Vice-President of our Union from 1957 to 1963.

Woonton took his B.A. in Commerce and Economics in 1925 at the University of Western Ontario but his graduate work was in Physics. He remained at Western for twenty years as a research fellow in physiology and later as a research professor in physics. In 1948 he joined McGill University as founding Director of the Eaton Electronics Research Laboratory and from 1955 until 1968 he was also Chairman of the Department of Physics. Following his retirement from McGill, he was the first Director of the Centre for Research on Atoms and Molecules at Laval University in Quebec and following his second retirement, he returned to a satisfying continuation of his personal research at the University of Western Ontario.

A Fellow of the Royal Society of Canada and of the Institute of Radio Engineers, he was also a past President of the Canadian Association of Physicists and holder of that association's Medal for Achievement. He was President of the Institute of Radio Engineers at the critical period of the amalgamation with the American Institute of Electrical Engineers to create the current Institute of Electrical and Electronics Engineers.

During World War II, Woonton concentrated his research activity into radar-related areas and after the war he was frequently called upon to aid in the solving of the electronic problems of North American air defence. In his first years at McGill he worked principally in microwave optics where he maintained a fine balance between experimental ability and theoretical understanding. He was then in a strong position to move into the new fields of microwave spectroscopy: electron paramagnetic resonance, electron-nuclear double resonance and electron

spin-lattice relaxation. Experimental equipment and techniques, second to none, were developed and assembled by him personally or under his close supervision and the research climate in his Laboratory produced a long list of pure and applied scientists of distinction to the benefit of his University, his country and the world beyond.

Gar Woonton was a radio scientist, teacher and administrator who has left his mark in many areas and on many who worked with him. He possessed great personal qualities: a prodigious capacity for work balanced by a great fund of human kindness, forbearance, tolerance and patience. But he was not alone, Gar and Isobel Woonton were blessed by a truly happy and mutually supportive marriage and we recognise the support his family provided during this remarkable career as we extend our sympathy to Mrs Woonton and to their daughter Elizabeth.

G.W. Farnell

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PIER FRANCESCO CHECCACCI  
1927-1980

Pier Francesco Checcacci passed away on 21 June 1980. He was born in Firenze, Italy, on 4 December 1927. In 1947 he graduated from the Technical Institute of Firenze and, in 1964, he received the PhD degree in Electromagnetic Waves. Since 1967 he has been giving a course on Radio Physics at the University of Firenze.

From 1948 he was a researcher at the Istituto di Ricerca sulle Onde Elettromagnetiche (formerly Centro Microonde) of the Consiglio Nazionale delle Ricerche; at the time of his death, he was research director. Recently the Physics Committee of the Consiglio Nazionale proposed him as the new Director of the Institute.

Professor Checcacci had official responsibilities in national and international organizations such as the Commissione Radio Scientifica Italiana, COSPAR and URSI. He was also a member of the Societa Italiana di Fisica and A.E.I. In particular, since 1961, he had been the Italian Official Member in COSPAR Working Group 1, and later member of the Steering Committee on Satellite Beacon Activities. Since 1972 he had been the Italian Official

Member in URSI Commission III on the Ionosphere, now Commission G on Ionospheric Radio and Propagation. He was also a member of the Inter-Commission Working Group on Remote Sensing.

His activity has been chiefly concerned with microwave optics, antennas, optical fibers, ionospheric physics and space electronics, with important and original contributions whose results were appreciated on an international basis. His intense scientific work, reported in many publications, witnesses the extent of his experience and the variety of his interests which, together with a very great enthusiasm, made him a promoter and organizer of unusual qualities.

His untimely death leaves a profound gap in the scientific community; in particular the I.R.O.E. lost with him one of his more valuable and precious collaborators.

A.M. Scheggi

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PHILIPPE LE CORBEILLER  
1891-1980

We regret to announce the death, in the Netherlands on 24 July 1980, of Professor Philippe Le Corbeiller, Professor Emeritus at Harvard University, Doctor ès Sciences, Université de Paris, Officier de la Légion d'Honneur.

Philippe Le Corbeiller was one of the group of French physicists and radio scientists who contributed so much to the development of radiocommunications in Europe in the years after World War I. He was a member of the French Delegation to the II and III General Assemblies of URSI in 1927 and 1928. It seems worth recalling that, in 1927, when it was proposed to change the name of the Union so as to avoid the outdated term "radio-télégraphie scientifique", Le Corbeiller wisely suggested that the new name should be chosen so as to make it possible to retain the already well-known initials "URSI".

At the Assembly in 1928, he presented a paper on the origin of the gyroscopic terms in the equations for electromechanical devices such as loudspeakers and tele-

phones, and he participated actively in the discussions in the former "Commission on Oscillations" and elsewhere.

The Proceedings of these early URSI Assemblies record the names of many of the distinguished pioneers of radio science who were devoted to URSI, and who helped to lay the solid foundations on which the subsequent growth of the Union was based: Gustave Ferrié, Robert Goldschmidt, Balth. van der Pol, A.E. Kennelly, E.V. Appleton, René Mesny, Robert Watson-Watt... With the death of Philippe Le Corbeiller, one of the few remaining links with this heroic epoch has been broken.

We offer our sincere sympathy to the members of the family of Professor Le Corbeiller and, in particular, to Mrs Le Corbeiller who maintains a strong personal interest in URSI and who is the generous donor of the Balth. van der Pol Gold Medal.

C.M. Minnis

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XX GENERAL ASSEMBLY OF URSI, 1981  
SCIENTIFIC PROGRAMME

The following information complements the preliminary data which appeared in the March and June 1980 issues of the Information Bulletin (Nos 212 and 213). It is still preliminary, and is given as a matter of general information.

1. OS1: Open Symposium on Remote Sensing of the Earth and its Environment

The session organizers have now been selected. They are:

<u>Session</u>	<u>Organiser</u>
- Remote sensing of the sea (including polar oceans)	Dr. G. Valenzuela
- Remote sensing of land (including snow/ice cover of land)	Dr. D.T. Gjessing
- Remote sensing of the lower and middle atmosphere	Dr. D.L. Croom
- Imagery processing in remote sensing	Dr. J.O. Thomas

2. OS2: Open Symposium on Millimeter and Submillimeter Waves

This Symposium is scheduled for 13 and 14 August 1981. The Chairman of the Organizing Committee is Dr. K.J. Button.

The Programme will consist of invited review papers and also contributed papers describing recent original work. Those wishing to submit draft titles and 100-word abstracts should send three copies to Kenneth J. Button, M.I.T. National Magnet Laboratory, Cambridge, MA 02139, USA. The latest date (deadline) for abstracts is 1 November 1980.

This URSI Open Symposium will be concerned with any work on millimeter, submillimeter and far infrared techniques, devices, systems, spectroscopy and applications. The Programme is intended to reflect the interests of members of URSI Commission A (Electromagnetic Metrology), URSI Commission B (Fields and Waves), URSI

Commission D (Physical Electronics), URSI Commission F (Wave Phenomena in Non-ionized Media), and URSI Commission J (Radio Astronomy). In particular:

- Millimeter and submillimeter sources of radiation
- Detectors
- Radio astronomy
- Atmospheric physics and propagation
- Imaging
- Receivers
- Radar
- System components
- Radiometry
- Guided propagation
- Calibrated standards
- Spectroscopy of gases, liquids and solids.

3. Scientific Sessions organized by a single Commission

Commission A proposes to organize sessions on

- Circuit measurements
- Time and frequency
- Signal and noise measurements
- Application of optical fibers to measurement
- Cryogenic measurements
- National Standards Laboratory Register.

Commission D is considering sessions on

- Cryoelectronics
- Optical systems and components.

Commission H proposes

- Remote determination of plasma wave spectra
- Computer aided plasma wave analysis.

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CONFERENCE ON PRECISION ELECTROMAGNETIC MEASUREMENTS  
CPEM 1980

The Conference on Precision Electromagnetic Measurements (CPEM) was initiated in 1958 and held originally every other year in the USA. It is now a yearly event, organized alternately in the USA and outside that country.

The 1980 Conference was held at the Stadthalle Braunschweig, from 23 to 27 June. It was organized by the Physikalisch-Technische Bundesanstalt, under the chairmanship of Prof. Dr. H.J. Schrader.

Precision measuring techniques were discussed, in particular with respect to:

Time and frequency; Direct current and low frequency; Dielectrics; Cryoelectronics; Fiberoptics; Automated Measurements; Lasers; Microwaves; AC/DC transfer; Power and energy; Antennas and fields; Radio techniques; Technical calibration services.

URSI was one of several sponsors of the meeting. The organizers reported 325 participants from 30 nations, and 130 papers given in 17 sessions (mostly in parallel).

The "Helmholtz Preis 1980", rewarding the best paper on "Precision electromagnetic metrology" submitted to CPEM '80, was presented to: D.J.E. Knight, G.J. Edwards, P.R. Pearce, N.R. Cross, all at the National Physical Laboratory (NPL), Teddington, England. Their paper was entitled: "A + 3 parts in  $10^{11}$  measurement of the frequency of the methane-stabilized helium-neon laser at 88 THz".

The IEEE Morris E. Leeds Award for the year 1979 was presented to; Robert D. Cutkosky (National Bureau of Standards, Washington D.C.) for "Internationally significant contributions to the field of precision impedance measurements and standards".

An exhibition of precision measuring instruments was held in conjunction with the Conference.

The proceedings of CPEM '80 will be published by IEEE-IM in a special issue (December 1980).

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REPORT ON THE XXII COSPAR PLENARY MEETING

Budapest, June 1980

More than 300 contributions were presented in the main COSPAR scientific meetings, and about 450 during nine simultaneous symposia which had been organized in cooperation with the relevant Unions. URSI cosponsored two of these: on Planetary Exploration, and on the International Reference Ionosphere. In contrast to last year's meeting, the attendance was more representative and valuable discussions took place in many of the sessions.

After the reorganisation undertaken during the past two years, the COSPAR body has still not regained its full equilibrium. The terms of reference of some Commissions and Subcommissions had to be redefined so as to conform to the interdisciplinary character now attributed to these by the new designation "Interdisciplinary Scientific Commissions" (ISC). In particular, on the suggestion of the representative of URSI, Commission B (on Space Studies of the Earth-Moon System, Planets and Small Bodies of the Solar System) was given wider terms of reference so as to cover not only astronomical activities, but also those in geodynamics and geodesy. On the proposal of the International Association on Geodesy (IAG), the relevant Subcommission of this Association of IUGG was accepted for incorporation in COSPAR ISC-B. It is hoped that, as a result of this action, the important scientific aspects of space geodesy and geodynamics will continue to be discussed in COSPAR.

Since its Commissions are now interdisciplinary, COSPAR feels that there is no longer any need to continue the ICSU "Solar System Panel" (CCMP). This stand against a modern tendency to create more and more ICSU Committees and Panels was fully supported by the Union representatives. On the other hand, the "Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science" (IUCAF), which is directly responsible to its constituting Unions (IAU and URSI), has proved to be efficient and should continue to be supported by COSPAR, which adheres also to the Commission.

As for the personal membership of COSPAR Commissions and Subcommissions, two "types of member" have been defined: the 'executive' members (not more than 15 per body) have the task of guiding and supervising the work

of the relevant body, and they will be replaced regularly every few years. On the other hand, there were some doubts about the rôle of the 'ordinary' members; the definition is now that they should be sufficiently active in the body and its scientific field to justify their being considered as potential candidates for 'executive' membership. Some additions to the lists of ordinary members were made, but these are to be rediscussed in the Commissions at the next (1982) Plenary Meeting. The Unions continue to be entitled to make additional nominations.

The publication policy of COSPAR is now based on a contract with Pergamon Press as the exclusive publisher with full financial responsibility. Since the Space Science volumes are not widely enough sold, the publisher now intends to replace them by a new periodical which will appear in an irregular sequence. The project of producing popular volumes on the results of space research was definitively given up.

COSPAR has a direct relation with the UN Committee on Outer Space Affairs. In preparation for an international conference, to be held by this organization in 1982, COSPAR was asked to contribute certain chapters of the basic conference papers: namely those dealing with a Review and Projection of Space Science. Also the report of COSPAR's Panel on "Potentially Environmentally Detrimental Activities in Space" will be rewritten in a condensed version for incorporation in the UN conference papers. In parallel with the 1982 COSPAR Meeting at Ottawa (Canada), not less than 10 symposia and 6 workshops have already been announced, a few of which might be incorporated into the Solar Terrestrial Physics Symposium to be held in conjunction with the COSPAR meeting. URSI may be interested in some of these events.

One of the COSPAR decisions calls the attention of satellite launching agencies to the importance of continuously providing radio beacons on geostationary satellites, so as to allow measurements of ionospheric electron content and scintillations to be made at many places. This text was proposed by the URSI representative.

COSPAR is mainly financed by direct contributions received from its members, the Academies. In view of current inflation, a 10% increase was adopted to take

effect in 1982.

The American Vice-President of COSPAR, Prof. F.S. Johnson, having resigned, Prof. L.E. Peterson was nominated to take his place for the rest of the period.

The next COSPAR Meeting will be held in Ottawa, Canada from 17-29 May 1982.

K. Rauer  
URSI Representative  
to COSPAR

July 1980

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#### DECISIONS ADOPTED BY COSPAR

The following Decisions were adopted by the Executive Council of COSPAR in Budapest, 14 June 1980.

Decision No 1/80, proposed by COSPAR ISC A.  
COSPAR,

in view of the fact that FGGE results clearly show the importance of improving the accuracy of satellite-derived wind data from cloud tracking, and

in view of the major problem of assigning correct altitudes to the cloud tracers, which can be satisfactorily addressed at this time using stereo processing techniques,

recommends to the geostationary satellite centers in the USA, India, Japan, USSR, and Europe that a working group of representatives from these agencies develop a plan to synchronize the operation of the imaging instruments so that stereo imagery can be achieved in the overlapping regions of geographical coverage.

Decision No 2/80, proposed by COSPAR ISC C.  
COSPAR,

recognizing the continuing importance of the long-term international utilization of advanced mass spectrometer techniques for the exploration of the atmospheres

and ionospheres of both the Earth and the planets,

recommends that the use of such in situ measurement techniques be encouraged through:

- intercomparison of relevant instrumentation, and
- reports of such inter-comparisons presented at meetings of COSPAR.

Decision No 3/80, proposed by the COSPAR Technical Panel on Dynamics of Artificial Satellites and Space Probes and ISC B.2

COSPAR,

noting

1. the significantly increased accuracy of current geodetic positioning techniques,
2. that the techniques used for geodesy and geodynamics require re-occupation of the same sites from time to time, and
3. the importance of the exact knowledge of the relationships between the instrumental reference point and the ground monument,

recommends that the national space agencies develop standardized documentation, with the goals that:

1. individual instrumental reference point positions be uniquely described in three-dimensions with respect to the ground monuments,
2. a unique system of identification be agreed upon for instrumental reference points and monuments, and
3. a catalogue of such positions be maintained and circulated to users.

Decision No 4/80, proposed by the COSPAR Technical Panel on Dynamics of Artificial Satellites and Space Probes and ISC B.2.

COSPAR,

noting the tendency to introduce project-oriented data formats for the exchange of satellite data results in the current use of many different formats, and

noting that this tendency leads to unnecessary and costly software modifications, and increases the incidence of errors in interpretation of data,

recommends, for the purpose of fostering international cooperation, that

1. a technical study be initiated by the national space agencies to ascertain what level of standardization is feasible, and
2. recommendations resulting from such a study be made available to all groups responsible for acquiring satellite data for the purpose of the adoption of the standard.

Decision No 5/80, proposed by the representatives of IUGG and URSI, endorsed by COSPAR ISC C and supported by the representative of IAU.

COSPAR,

Recognizing the serious limitations in accuracy for advanced radio location methods that arise from the largely variable effects of ionospheric refraction, and

considering that these limitations are of increasing importance for the application of such methods in radio astronomy, geodesy and radiolocation of satellites, in particular with the new techniques of very long baseline interferometry,

strongly recommends that satellite launching agencies continuously provide radio beacons on appropriate geostationary satellites, and

further recommends that long-term routine measurements of the ionospheric total electron content be continued or initiated at ground stations in all countries.

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#### INTERNATIONAL REFERENCE IONOSPHERE

The preparation of an International Reference Ionosphere (IRI) is the responsibility of a joint URSI/COSPAR Committee whose Chairman and Vice-Chairman are Prof. K. Rawer (FR Germany) and Dr. A.D. Danilov (USSR) respectively.

During the COSPAR Meeting in Budapest, a Workshop, sponsored by URSI and COSPAR, was held from 11-13 June 1980. The objectives were a) to make comparisons between actual measurements of various ionospheric parameters and the values predicted by the present provisional IRI, and b) to discuss proposed improvements to the provisional IRI.

During the five sessions, nearly 40 papers were presented, and the lively discussions in most of the sessions indicated the considerable interest that has been aroused by the IRI project. The papers covered not only profiles of electron and ion densities, but also those of electron and ion temperature. It was meritable that considerable attention should be given also to the ionic structure of the ionosphere and to certain aspects of the very complex photochemical processes, which play such an important rôle at many levels in the atmosphere. The Proceedings of the Workshop will be published early in 1981 in the UAG Series.

Following the publication by URSI in 1978 of International Reference Ionosphere 1978 (compiled by Rawer, Ramakrishnan and Bilitza), a second edition (including revisions and typical profiles) is due to appear in 1980 in the UAG Series published by World Data Centre A, Boulder, Colorado.

It is proposed to prepare another revised and updated version of IRI in 1982; this will take account of the discussions held in Budapest, and any additional new information that may become available before the end of 1981.

Proposals or suggestions for improvements in IRI should be addressed to:

Professor K. Rawer,  
Herrenstrasse 43,  
D - 7801 March-Hugstetten,  
Fed. Rep. of Germany,

or  
Dr. A.D. Danilov,  
Institute of Applied Geophysics,  
Hydrometeorological Service,  
6 Pavlik Morozov ul.,  
Moscow, USSR.

2 July 1980

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C.M. Minnis

SILVER JUBILEE MEETING

at the

Institute of Radio Engineering and Electronics  
in Prague, June 1980

The Institute of Radio Engineering and Electronics of the Czechoslovak Academy of Sciences celebrated its Silver Jubilee with a special scientific session in its auditorium. Professor Václav Zima, Chairman of URSI Commission C, and Corresponding Member of the Czechoslovak Academy of Sciences, opened the session with a review of the Institute's work on complex radio electronic systems, and on electronic and opto-electronic structures. Problems for study are selected with the objective of meeting the present and future needs of Czechoslovak industry. He mentioned the good collaboration with analogous institutes in the socialist countries.

Prof. A. Ya. Spasov, Director of the Institute of Electronics of the Bulgarian Academy of Sciences in Sofia, reviewed research work on non-linear oscillations in his Institute, which is based on the well-known work of Balh. van der Pol and others. Prof. F.L.H.M. Stumpers, who was invited under the Cultural Exchange Treaty between Czechoslovakia and the Netherlands, spoke about the influence of microelectronics in telecommunications. On behalf of URSI, he congratulated the Institute on its Jubilee.

Prof. K. Géher, from the Research Group for Informatics and Electronics of the Hungarian Academy of Sciences, reviewed the deterministic and statistical methods of design in circuit theory. Professor A.V. Sokolov, Vice-Director of the analogous Institute in Moscow, discussed the propagation of microwaves through the atmosphere. Dr. Čtyroký, of the Prague Institute, lectured on the properties and applications of anisotropic optical waveguides.

Many representatives of the Czechoslovak electronic industry, research institutes and technical universities listened to the lectures with great interest, and a lively discussion followed. It was a pleasure to see Professor Stransky, President of the URSI Committee in Czechoslovakia, among the participants, apparently well recovered from the illness that unfortunately prevented

his attendance at the celebration of the 60th Anniversary of URSI in Brussels in 1979.

F.L.H.M. Stumpers

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WAVE DYNAMICS AND RADIO PROBING  
OF THE OCEAN SURFACE

Miami, Florida, 15-22 April 1981

This Symposium will be organized by the Inter-Union Commission on Radio Meteorology (URSI/IUGG) and held under the joint sponsorship of NOAA, NASA and ONR. The aims of the symposium include a review of the theoretical, experimental and observational developments that have taken place in the last ten years and the presentation of new research results. Topics to be covered include basic wave dynamics, dynamics of wind-wave spectra and interactions with oceanic structures, measurement and analysis techniques including microwaves, high frequency sensing and classical methods, inverse modelling, wave prediction and related topics. Several technical reviews will be offered as well as selected contributed papers and possibly poster sessions. The proceedings of the meeting will subsequently be published by Plenum Press.

The organizing committee includes Sir George Deacon, Honorary Chairman; K. Hasselmann and Owen Phillips, co-chairmen; together with the programme committee, D.E. Barrick, L.M. Brekhovskikh, F. Dobson, N.E. Huang, R.B. Long, M.S. Longuet-Higgins, W.H. Munk, D.B. Ross, Y.Toba, G.R. Valenzuela and S. Wickerts.

Contributions are invited on any of the topics listed above. Abstracts of about one page should be sent by 1 October 1980 to the Secretary of the Programme Committee, Dr. G. Valenzuela, Physical Oceanography Branch, Code 4344, Environmental Sciences Division, Naval Research Laboratory, Washington D.C. 20375, USA. The Programme Committee reserves the right to accept or reject contributions and to select those for oral presentation or for poster sessions. Completed manuscripts are due at the

meeting; these will be refereed prior to publication.

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8TH SYMPOSIUM ON SIGNAL PROCESSING  
AND APPLICATIONS

Nice, 1-5 June 1981

The 8th GRETSI (Groupe de Recherches en Traitement du Signal) Symposium will be held in Nice, France, from 1 to 5 June 1981. The Steering Committee for the Symposium includes: Prof. A. Blanc-Lapierre, Dr. B. Derouet, M. H. Mermoz, Prof. B. Picinbono, and M. P. Tournois.

Tutorial or review papers as well as advanced research papers can be submitted in the following areas of interest:

1. Signal and noise theories; models.
2. Detection, estimation.
3. Adaptive and non-adaptive time signal processing.
4. Adaptive and non-adaptive spatial signal processing.
5. Signal processing and control theory.
6. Signal processing and computer science.
7. Signal processing and biomedical applications.
8. Signal processing and non-destructive evaluation.
9. Propagation.
10. Classification and pattern recognition.
11. Image processing.
12. Communications.
13. Radar and sonar.
14. Technologies in signal processing.

Official languages of the Symposium will be French and English. Poster presentations are also accepted. The full text of the conferences and of the poster presentations will be published in the Proceedings to be picked up at the Registration Desk. Acceptance of papers will be on the basis of a 200-word abstract.

Deadlines: 1 Nov. 1980 - Submission of abstracts.  
31 Dec. 1980 - Notification of acceptance.  
1 Apr. 1981 - Submission of photo-ready papers.

Advance submission of abstracts is encouraged.

For further information, please contact the Symposium Secretary at the following address:

Secrétariat du Colloque GRETSI,  
7 chemin des Presses, B.P. 93,  
F - 06802 - Cagnes-sur-mer, France.

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NEWS FROM MEMBER COMMITTEES

Canada

The Canadian URSI Committee has recently elected Dr. E.V. Jull and Dr. L.H. Doherty as President and Secretary of the Committee respectively.

The names and addresses of the Canadian Official Members in the URSI Commissions will appear in the December 1980 issue of the Bulletin.

