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MILES A.F. BARNETT

1901-1979

Dr. Miles Barnett died on 27 March 1979, one month before his 78th birthday.

Miles Barnett had a distinguished academic career: firstly, in New Zealand, graduating with first class honours in mathematics and physics from the University of Otago in 1924 and, secondly, in England where he completed his Doctorate at Cambridge in 1927 with a thesis entitled: "An Experimental Proof of Large Angled Deviations of Wireless Waves in the Upper Atmosphere". At Cambridge he worked in the Cavendish Laboratory under the Directorship of Lord Rutherford and Professor E.V. Appleton, and the research for his thesis was designed to prove the existence and measure the height of ionised layers in the upper atmosphere. He was also a part-time worker for the British Radio Research Board.

On his return to New Zealand he worked as a physicist with the Department of Scientific and Industrial Research on problems connected with seismology, observatories, geophysical prospecting, refrigeration and radio, and the development of New Zealand industries. In 1929 he was elected Fellow of the Institute of Physics and in 1933 was a member of the Broadcast Coverage Commission for the National Broadcasting Service.

In 1935 he studied meteorological services in England and Norway before becoming Senior Meteorologist, New Zealand Meteorological Service, with responsibility for developing services for Aviation. In 1937 he was Secretary of the International Meteorological Organisation (IMO) Meteorological Conference for the Southwest Pacific; in 1951 he was President RC-V IMO, and also a member of the Drafting Committee, IMO Extraordinary Conference of Directors.

He was Permanent Representative of New Zealand with the World Meteorological Organisation (WMO) 1951-1962, President of RAV 1951 to 1955, first Vice-President of WMO 1955 to 1959, and elected Member of the Executive Committee (WMO) 1959 to 1962. He was an active member of learned and scientific societies and was for many years on the Carter Observatory Board. Dr. Barnett was Chairman

of the New Zealand Radio Research Committee for at least 14 years. Until about 1964 this was the National Committee for URSI. In 1947, he was elected as Fellow of the Royal Society of New Zealand; he was on its Council for some years and was its President in 1964. He also served on several Royal Society national committees such as those concerned with the IGY, and geodesy and geophysics.

He was Director of the New Zealand Meteorological Service from 1939 to 1962. The Meteorological Service owes a lot to Dr. Barnett's tactful guidance and leadership, both during the difficult war years and in the period of reconstruction which followed, and to his upholding of particularly high standards. These same qualities of tact, guidance and adherence to high standards were also of benefit to international meteorology, particularly during the formative years of the World Meteorological Organisation.

J.S. Hickman

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STEPHEN F. SMERD

1916-1978

The sudden death of Dr. Stephen Smerd on 20 December 1978 will be particularly regretted by the radio-astronomers in URSI Commission J. His interest in the physics of the sun began when he joined the enterprising group of radioastronomers formed in Australia after the end of World War II, and continued until his death.

He played an active rôle in the International Geophysical Year (1957-58) and was responsible for the World Data Centre for Solar Radio Emission in Sydney. At the IGY Committee Meeting in 1958, it was recommended that "special care should be given to the publication of solar "radio noise data because of their extreme importance". The onerous task of compiling and editing the data was given to Dr. Smerd. Radioastronomers will be familiar with the resulting volume which contains these data and also Dr. Smerd's preliminary conclusions: "Solar Radio

Emission during the IGY" (Annals of the IGY, Vol. 34, 1969). This volume exists only thanks to the great patience and pertinacity of Dr. Smerd, for many of his processed data were lost in transit between Sydney and Paris and, later on, an accident at the printer's works made it necessary for the type to be completely reset after the galley proofs had already been corrected.

At the time of his death, Dr. Smerd was a member of the Steering Committee for the Solar Maximum Year which begins on 1 August 1979. As the Chairman (Prof. de Jager) has pointed out, his dynamic and stimulating activity and his always helpful advice will be greatly missed.

C.M. Minnis

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#### XX GENERAL ASSEMBLY OF URSI, 1981

The XX General Assembly of URSI will be held in the Hyatt Regency Hotel, in central Washington D.C., from 10-19 August 1981. The URSI Committee in the USA (Chairman Dr. C. Gordon Little) will act as host. It is expected that, as in Helsinki in 1978, there will be over 1,000 registered participants from the 36 countries and territories in which there are Member Committees of the Union.

A preliminary announcement has recently been circulated to all Member Committees by the Organising Committee in Washington. The Chairman of this Committee is Dr. Geoffrey Hyde of the COMSAT Laboratories in Clarksburg, Maryland and the Secretary is:

Mr. R.Y. Dow,  
National Academy of Sciences,  
2101 Constitution Avenue N.W.,  
Washington D.C. 20418, USA.

Telephone: (202) 389.6478.

The remaining members of the Organising Committee are Drs H.M. Altschuler, V. Arens, G. Hagn, R. Lang, T. Senior, L. Taylor, B. Weinschel and G. Westerhout.

The Scientific Programme for the Assembly is being planned by a Steering Committee set up in Helsinki under the Chairmanship of Prof. W.E. Gordon (Vice-President and Treasurer of URSI). Prof. Van Bladel, who is a member of

this Committee, circulated a questionnaire earlier this year to most of the participants at the 1978 Assembly and the replies received will be taken into account when decisions are made concerning the structure of the scientific programme in 1981.

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#### ABNORMAL IONOSPHERIC PROPAGATION

Following the acceptance of a new appointment by Mr. McCue, Mr. D.G. Cole has agreed to be Chairman of URSI Working Group G.9 on Abnormal Ionospheric Propagation. The objective of the Group is to prepare a report for the URSI General Assembly in 1981 with particular emphasis on:

1. Sporadic E
2. Spread F
3. Meteors
4. Auroral ionization and the sub-auroral trough
5. Ionospheric storms and radio blackouts
6. Ducts and field-aligned ionization
7. Electrojets.

The present membership of the Group is as follows:

Argentina	A. Giraldez
Australia	D.G. Cole (Chairman)
Belgium	L. Bossy
Canada	D. Muldrew
FR Germany	J. Hortenbach
Finland	T. Nygren
Japan	I. Kasuya (Vice-Chairman) N. Matuura K. Sinno N. Wakai
New Zealand	W. Baggaley R. Bennett
Sweden	H. Derblom
USA	E.K. Smith (Vice-Chairman) K. Davies C. Rush

R. Tsunoda

It is hoped to complete the preparation of a first draft report late in 1979. Mr. Cole's address is

Ionospheric Prediction Service,  
162-166 Goulburn St.,  
Darlinghurst N.S.W. 2010, Australia.

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PRECISION ELECTROMAGNETIC MEASUREMENTS

Ottawa, 26-29 June 1978

The 9th Conference on Precision Electromagnetic Measurements (CPEM) was held at the Government Conference Centre in Ottawa from 26-29 June 1978 at the invitation of the National Research Council of Canada. It was attended by 200 participants from 17 countries. The subjects covered were:

	<u>Papers</u>
Time and frequency	11
Automated instruments and measuring techniques	6
Microprocessor-based instrumentation	4
Microwave parameters	7
Stabilized lasers	7
Digital techniques and instrumentation	6
Noise measurements and radiometry	5
Ratio techniques	8
Electromagnetic fields and dielectrics	7
DC and low-frequency measurements	13
Total	<u>74</u>

The following summary of the highlights of the programme has been extracted from the Report prepared by the Chairman of the Conference in Ottawa, Dr. A.F. Dunn.

The range of topics covered was similar to that of CPEM in previous years, with improved accuracy and reliability being reported in many fields. Automation is playing an increasingly important rôle in many measurements, but even more striking were the reports of the varied uses of digital techniques in the solutions to problems previously handled by analogue techniques, if at all.

The development of improved time-keeping instruments, including continuous-operating cesium clocks, continues and the allied laser stabilization techniques implies that the eventual common definition of both length and time is approaching.

Reports of international comparisons show that intricate measurements by varying techniques in different laboratories lead to excellent agreement, with the satisfying assurance of reliability in the basic concepts of the measurements. Before being reported, these comparisons probably also led to the search for previously unsuspected systematic errors in the systems, thus reinforcing one of the prime suggestions of the keynote speaker, Dr. F.K. Harris who spoke on "The Base of Measurement Science".

Forty of the papers presented were published in Transactions of the IEEE (Instruments and Measurement) in the December 1978 issue. Registered participants have received copies of this publication, as well as the 168-page Digest which was available in Ottawa during the Conference.

URSI has been a Cooperating Sponsor of the CPEM series since the 1972 event and URSI Commission A (formerly Commission I) took an active interest in the Conferences from 1964. The objective of URSI in sponsoring CPEM has been to encourage an increasing level of international participation in the Conferences. Between the 1966 and 1976 events, both held in the USA, the ex-host participation increased from 8% to 31%. For the Conferences held in the UK in 1974 and in Canada in 1978, the ex-host participation was 52% and 65% respectively.

It seems safe to conclude that these biennial events have become a recognised international forum for reviewing progress in the field of precision electromagnetic measurements. The CPEM Executive Committee under its present Chairman, Dr. B.O. Weinschel, is to be congratulated on its successful management of these events. The URSI representative in this Committee during the period up to 1978 was Mr. R.F. Clark (NRC, Canada) and he has been succeeded by Dr. H.W. Hellwig (NBS, USA).

A preliminary announcement concerning the next CPEM, which will be held in Braunschweig, FR Germany, from 23-27 June 1980, was included in URSI Inf. Bull. No 207. Further information is available from

Prof. Dr. H. Capptuller,  
Physikalisch-Technische Bundesanstalt,  
Bundesallee 100,  
D - 3300 Braunschweig, FR Germany.

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ELECTROMAGNETIC THEORY AND GEOPHYSICAL  
EXPLORATION

Dr. James R. Wait is Guest Editor of a Special Issue of Proceedings of the IEEE on Applications of Electromagnetic Theory to Geophysical Exploration, which is to be published in July 1979 (Vol.67, No 7). Half of the papers in this issue were presented at a special session during the XIX General Assembly of URSI in August 1978.

The contents of this issue are as follows:

- Pulse Propagation in Lossy Media Using the Low Frequency Window for Video Pulse Radar Applications, G.A. Burrell Jr., and L. Peters, Jr. (Ohio State University)
- A Characterization of Subsurface Radar Targets, L.C. Chan, D.L. Moffatt, L. Peters, Jr. (Ohio State University)
- Summary of Image Theory Expressions for the Quasi-Static Fields of Antennas at or Above the Earth's Surface, Peter R. Bannister (Naval Underwater Systems Center New London, Connecticut)
- Numerical Modeling for Electromagnetic Remote Sensing of Inhomogeneities in the Ground, M. Cauteran, J.L. Martin, P. Degauque, R. Gabillard (Lille University, France)
- Transient Electromagnetic Waves Applied to Prospecting, T. Lee (Gordon, Australia)
- Transient Electromagnetic Fields of a Vertical Magnetic Dipole on a Two Layer Earth, Samir F. Mahmoud, Adel Z. Bostros (Cairo University), and James R. Wait (ERL/NOAA, Boulder, Colorado)
- Geomagnetic Depth Sounding by Means of Oceanographic and Aeromagnetic Surveys, G.P. Gregori (Istituto di Fisica dell' Atmosfera, Rome, Italy) and L.J. Lanzerotti (Bell Laboratories, Murray Hill)



The Fundamental Model of Magnetotelluric Sounding, V.I.  
Dmitriev, M.N. Berdichevsky (Moscow State University)

Electromagnetic Induction in Thin Sheet Conductivity  
Anomalies at the Surface of the Earth, J.T. Weaver  
(University of Victoria, Canada)

Electromagnetic Induction Effects at an Ocean Coast,  
Gaston Fischer (Observatoire Cantonal, Switzerland)

Reconstruction Algorithms for Geophysical Applications in  
Noisy Environments, Roger D. Radcliff, Constantine  
A. Balanis (West Virginia University)

Computerized Geophysical Tomography, K.A. Dines, R.J.  
Lytle (Lawrence Livermore Laboratory, California).

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## URSI FINANCES

In accordance with the request of the Finance Committee, the practice of publishing the accounts of the Union annually in the URSI Bulletin is being continued.

The accounts for the year ended 31 December 1978 were audited by Gimson & Co., Chartered Accountants, of London and are reproduced below.

In spite of the additional expenditure incurred in connection with the General Assembly, there was an excess of income over expenditure, during the year, of \$2,004. This is attributable to two exceptional sources of income:

- a) a supplementary grant of \$4,000 received from ICSU/UNESCO in addition to the basic grant of \$8,000;
- b) a net "gain on exchange" of \$2,618.

During 1978 the value of the dollar, relative to the Belgian franc, fell by 17%. On the other hand, it has been our policy in recent years to hold most of our assets in francs, and in this way we have been able to conserve their purchasing power. The "gain on exchange" can be regarded, approximately, as the increased number of dollars (as at 31 December 1978) required to represent the income received during the earlier months of the year. A similar gain arises from the revaluation, in terms of dollars at 31 December 1978, of the balance brought forward on 1 January 1978.

The balance in hand at the end of 1978 was approximately equal to total expenditure during one year. This is considered to be a reasonable level since it permits the Treasurer to make firm advance commitments for future expenditure in connection with events which must be planned well ahead. The net interest received on these assets is about \$6,000 per year and it represents a valuable additional source of income.

W.E. Gordon  
Treasurer

C.M. Minnis  
Acting Secretary General

9 May 1979

INTERNATIONAL UNION OF RADIO SCIENCE (URSI)

INCOME AND EXPENDITURE ACCOUNT

FOR THE YEAR ENDED 31st DECEMBER, 1978.

<u>INCOME</u>	<u>U.S.\$</u>	<u>U.S.\$</u>	<u>U.S.\$</u>
Subscriptions from Member Committees			86,070
Interest - Gross - in Belgian Francs	8,158		
<u>Less: Tax</u>	<u>1,631</u>		
	6,527		
Interest - in U.S. Dollars	<u>885</u>	7,412	
<u>Less: Interest attributable to:</u>			
Pension Fund - Secretary General	1,076		
Balth. van der Pol Gold Medal Fund	<u>324</u>	<u>1,400</u>	6,012
Sale of URSI Bulletin			223
Allocation from UNESCO Subvention to ICSU			12,000
Surplus on Symposia in 1977			3,096
Gain on Exchange (net)			<u>2,618</u>
			<u>110,019</u>
<u>EXPENDITURE</u> (for further details see schedule attached)			
Meetings	6,364		
XIX General Assembly	25,966		
Publications	8,437		
Grants	<u>1,550</u>		
TOTAL EXPENDITURE ON SCIENTIFIC ACTIVITIES		42,317	
Administration:			
Salaries and Pensions			
(including Social Security)	55,222		
Office and General Expenses	<u>8,324</u>		
TOTAL EXPENDITURE ON ADMINISTRATION		63,546	
I.C.S.U.			
Dues for 1978		<u>2,152</u>	
TOTAL EXPENDITURE FOR THE YEAR			(108,015)
EXCESS OF INCOME OVER EXPENDITURE FOR THE YEAR			2,004
BALANCE IN HAND AT 1st JANUARY, 1978.			
B.F. 3,112,278 @ 30	103,743		
B.F. 3,112,278 @ 35	<u>88,922</u>		
Profit on Devaluation	<u>14,821</u>		
Balance as per Accounts at 31st December, 1977.		88,922	
Add: Profit on Devaluation - as above		<u>14,821</u>	
Revised Balance at 1st January, 1978.			<u>103,743</u>
BALANCE IN HAND AT 31st DECEMBER, 1978.			<u>\$ 105,747</u>

Note:

Subscriptions from Member Committees, and certain other Receipts and Payments which represent amounts originally quoted in U.S. Dollars, have been shown in the amounts so quoted. In other cases the figures shown on the above Income and Expenditure Account and attached Balance Sheet represent the amounts actually received or paid in Belgian Francs, or the equivalent thereof at the rate of exchange being used by URSI at the date of the Receipt or Payment concerned, and all such amounts have, for the purposes of these accounts, been converted into U.S. Dollars at the United Nations Official rate of exchange ruling at 31st December, 1978.

INTERNATIONAL UNION OF RADIO SCIENCE (URSI)

INCOME AND EXPENDITURE ACCOUNT  
FOR THE YEAR ENDED 31st DECEMBER, 1978, (CONTINUED)

SUPPLEMENTARY SCHEDULE SHOWING FURTHER  
DETAILS OF CERTAIN ITEMS OF EXPENDITURE

	<u>U.S.\$</u>	<u>U.S.\$</u>
<u>Meetings</u>		
URSI Board of Officers	5,535	
Miscellaneous Travel	<u>829</u>	6,364
<u>XIX General Assembly</u>		
Scientific Symposia and Sessions of Commissions	14,113	
Organisational Expenses	<u>11,853</u>	25,966
<u>Publications</u>		
URSI Information Bulletin Nos. 205-207	5,897	
Extra copies of Bulletin No.206 for Assembly	1,500	
INAG Bulletin	500	
URSI Brochure (Spanish Edition)	200	
International Reference Ionosphere 1978 (net)	240	
Electron Density Profile Analysis	<u>100</u>	8,437
<u>Grants</u>		
IUCAP	1,250	
IUCRM	<u>300</u>	1,550
<u>TOTAL EXPENDITURE ON SCIENTIFIC ACTIVITIES</u>		<u>\$ 42,317</u>
<u>Office and General Expenses</u>		
Office Rent, Heat, Repairs, etc.		2,793
Stationery and Office Supplies		621
Insurance		684
Telephone		807
Postage		944
Bank Charges		351
Entertainment		86
Audit and Accountancy		2,000
Miscellaneous		38
		<u>\$ 8,324</u>

INTERNATIONAL UNION OF RADIO SCIENCE (URSI)

BALANCE SHEET

31st DECEMBER, 1978.

<u>ASSETS</u>	<u>U.S.\$</u>	<u>U.S.\$</u>	<u>U.S.\$</u>
<b>Bank Balances:</b>			
On Deposit Account			
In Belgian Francs	53,333		
In American Dollars	<u>16,129</u>	69,762	
On Current Account			
In Belgian Francs	12,198		
In American Dollars	<u>10,365</u>	<u>22,563</u>	92,325
Belgian Government Securities			82,727
Petty Cash and Stamps			588
Sundry Debtors			<u>153</u>
			175,793
<b>Less: Creditors:</b>			
IUCAF		12,921	
IUCRM		14	
IUWDS		2,541	
Sundry		<u>22,832</u>	<u>(38,308)</u>
			137,485
<b>Special Funds</b>			
Balth. van der Pol Gold Medal Fund		5,887	
Pension Fund - Secretary General		20,875	
Registration Fees Fund (1978 Assembly)			
Fees Received	16,759		
Less: Cost of Proceedings, Abstracts etc.	<u>11,783</u>	<u>4,976</u>	
Balance at 31st December, 1978.			(31,738)
<b>NET TOTAL OF URSI FUNDS</b>			<u>\$ 105,747</u>

Represented by:

<u>As at</u>			<u>As at</u>
<u>1st January, 1978.</u>			<u>1st January, 1979.</u>
<u>U.S.\$ @</u>	<u>U.S.\$ @</u>		<u>U.S.\$ @</u>
<u>\$1 = B.F. 30</u>	<u>\$1 = B.F. 30</u>		<u>\$1 = B.F. 30</u>
57,917		<b>Reserve Fund:</b>	
		Closure of Secretariat	52,053
		<b>Funds for Scientific Activities</b>	
	21,933	XIX General Assembly	-
	19,667	Meetings and Symposia in 1979	33,333
	4,124	Special Purposes Fund	-
	-	XX General Assembly (1st Instalment)	10,000
45,724	-	Special Symposium Fund	<u>10,000</u>
	102	Unallocated	<u>361</u>
<u>\$ 103,743</u>			<u>\$ 105,747</u>

REPORT OF THE AUDITORS TO THE MEMBERS OF THE  
INTERNATIONAL UNION OF RADIO SCIENCE (URSI)

In our opinion, the above Balance Sheet and attached Income and Expenditure Account, read in conjunction with the note at the foot of that Account, give a true and fair view of the state of the affairs of the International Union of Radio Science at 31st December, 1978, and of the excess of Income over Expenditure for the year ended on that date.

*Gimson & Co*

GIMSON & CO.  
Chartered Accountants.

22-24, Buckingham Palace Road,  
LONDON, SW1W 0QP.

16th March, 1979.

LONG-TERM CHANGES IN THE LEVEL OF ACTIVITY  
OF URSI

C.M. Minnis  
Acting Secretary General, URSI

(Note: This article is a revised and up-dated version of a document submitted to the Finance Committee in 1978 during the General Assembly in Helsinki. It explains the meaning of the term "level of activity", quoted in URSI Council Res. UC.6, which was used in discussing the URSI budget for the period 1979-81).

1. Introduction

The principal responsibility of URSI is to initiate and support various activities designed to promote research in the field of radio science. These activities include, for example, the sponsorship of international symposia, the publication of the URSI Bulletin and the INAG Bulletin, the organisation of the General Assemblies and the periodic meetings of the principal officers of the Union between Assemblies, and the provision of support for two Inter-Union Commissions.

In URSI in recent years, the cost of these activities has been covered mainly by the annual contributions received from our Member Committees. Some supplementary income is provided by the annual grant paid by ICSU, out of funds received from UNESCO, and by interest payments resulting from the investment of our reserve funds.

2. Factors influencing the Level of Activity of URSI

At present the unit contribution payable by our Member Committees is \$400, which is more than twice as great as in 1969. However, this increase does not imply a corresponding increase in the "level of activity" of the Union. The benefits of increased income from Member Committees have been offset by several adverse factors: the high rate of inflation in many countries, the fall in the value of the US dollar relative to many other currencies, and decreases in the size of the grants received from UNESCO through ICSU. In order to appreciate the results of the complex interplay of these different factors, it is necessary to make a quantitative assessment of the influence of each one. The purpose of the present discussion is to assign a numerical value to each

factor, and to derive an index which will represent approximately the real "level of activity" in each year.

The factors to be considered are

- x = the amount (in US dollars) of the unit contribution payable by Member Committees (the total number of units is at present 217 per year);
- y = the value of the dollar relative to other currencies;
- z = the cost of various goods and services (air fares, hotel charges, secretarial and office expenses, printing costs, etc.);
- a = the annual grant (in US dollars) received from ICSU/UNESCO;
- b = a correction factor related to the proportion of the income that is available for scientific activities.

During the period 1969-79 there have been some small changes in the total number of unit contributions payable; the present number is 217, and hence the total income (I) in a given year is:

$$I = (217x + a) \text{ dollars} \quad (1)$$

However, the purchasing power (P) of this income is proportional to the value of the dollar (y), expressed in terms of other currencies, and is inversely proportional to costs (z). Hence we have:

$$P = \frac{(217x + a)y}{z} \quad (2)$$

In the quantitative treatment which follows, (Table 1) the value of the dollar is expressed in terms of the Belgian franc, and the variations in costs are assumed to be given by the Belgian Retail Prices Index. The values that have been used for both these factors refer to the month of March, and no attempt has been made to average them over the year.

It is necessary to take into account also the fact that the salary of the Secretary General was reduced by 50% in 1976, and that the post will be an unpaid one as from 1979. The result of each of these two changes is to increase the proportion of the income of the Union that is available for scientific activities. The factor (b) in Table 1 represents approximately the effect of the changes made in 1976 and 1979. From 1979 onwards, the

activities of URSI will no longer be centrally coordinated in the Brussels Secretariat, since many of the responsibilities formerly carried by the Secretary General will be transferred to the other members of the Board of Officers. This may lead to some increases in administrative costs, but no allowance has been made for this possibility in assigning numerical values to the factor (b) after 1978.

### 3. An Activity Index

In the light of the above discussion, the "level of activity" ( $L$ ) in URSI in year ( $r$ ) is defined as:

$$L_r = \frac{100(217x + a)yb}{zL_0} \quad (3)$$

where  $L_0$  is the value of  $L_r$  in 1969.

The values of all the factors discussed above are given in Table 1 together with the resulting value of the "level of activity" as defined in Eq.3. In view of the assumptions made in compiling Table 1, the accuracy of the values of  $L_r$  is probably not better than + 5%. However, several comments can be made on the changes in  $L_r$  since 1969.

1) At the time of the Assembly in 1972, it was not possible to foresee the full extent of the coming changes in the world economic situation, and hence to take appropriate action. In consequence, by 1975 the activity index had fallen to 64% of its 1969 value. Fortunately the URSI reserves, which had been built up over a number of years, were available and they were used to maintain activity at a level greater than that indicated by  $L_r$ , and to cover the cost of the General Assembly in Lima in 1975.

2) At the Assemblies in 1975 and 1978, realistic estimates were made of the future trend of the various factors discussed above for the budget periods 1976-78 and 1979-81 respectively. The resulting changes in the unit contribution, recommended by the Finance Committee and adopted by the URSI Council, were designed to restore the level of activity to the values which were characteristic of the years before the first devaluation of the dollar in 1971. The values of  $L_r$  for the years 1976-1978 show that the forecasts made in 1975 were reasonably accurate. In the absence of unforeseen events, the values



of  $L_r$  for the years 1979-1981 will be approximately 90% of the 1969 value.

#### 4. Conclusion

1) In spite of the considerable difficulties created, since 1971, by the world economic situation, URSI has been able to avoid any serious financial problems. This successful result is attributable mainly to the willingness of our Member Committees to accept realistic recommendations for increases in the unit contribution, and also to the success of the Finance Committee in making quite accurate forecasts of future trends.

2) The temporary difficulties of the years 1973-1975 did not have serious consequences for the activities of URSI because adequate reserve funds had earlier been built up and were available for use in case of such emergencies.

Table 1. Factors used in calculating the Activity Index:

Year	$\frac{L_r}{L_r}$		Unit Contr.	ICSU/ UNESCO \$(000)	Correction Factor (b)	$L_r$
	Prices Index (March)	\$1- FB (March)				
1969	91	50	175	14.4	1	100
1970	95	50	175	13.4	1	96
1971	99	50	175	11.4	1	92
1972	103	44	200	12.4	1	89
1973	111	41	200	11.4	1	77
1974	120	41	200	11.4	1	71
1975	139	34	250	11.5	1	64
1976	153	39	300	8	1.12	89
1977	164	37	350	11	1.12	92
1978	174	32	400	12	1.12	86
1979	180	29	400	8	1.34	90
1980	(189)	(28)	460	(8)	1.34	95
1981	(199)	(26)	520	(8)	1.34	95

Note: Extrapolated values are shown in parenthesis.

**3rd WORLD TELECOMMUNICATION FORUM**

**Technical Symposium 23-26 September 1979**

The Forum will be held in Geneva on the occasion of the World Administrative Radio Conference (24 September - 30 November) and the World Telecommunications Exhibition (20-26 September). It is jointly sponsored by the International Telecommunication Union, URSI and many national societies concerned with telecommunications.

The sessions will deal with the following subject areas:

**The integration of the world telecommunication network**

Structure and technology

Mobile systems, troposcatter, propagation

Radio links and satellites

Rural telecommunications

**From existing to new telecommunications networks. New technologies - New potentials in telecommunications**

Switching

Digital and data transmission and network

Optical fibre communications

System performance - implementation

**The future of worldwide communications**

New facilities, new services, television

Transition problems, economic and social implications

Management and maintenance

Integration of services and systems, network models.

Approximately 120 papers will be presented. These have been carefully selected, from over 400 papers submitted, by the Programme Committee under the Chairmanship of Prof. F.L. Stumpers. Simultaneous translation will be provided in English, French and Spanish.

Enquiries concerning participation should be addressed to:

ITU ( Telecommunications Forum)

Place des Nations

CH - 1211 Geneva 20, Switzerland.

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COMMISSION F INTERNATIONAL SYMPOSIUM  
EFFECTS OF THE LOWER ATMOSPHERE ON RADIO PROPAGATION  
AT FREQUENCIES ABOVE 1 GHz

Lennoxville, Quebec Province, Canada

26-30 May 1980

An international symposium, relevant to telecommunications applications of the radio spectrum above 1 GHz, is planned for May 1980. A novel feature will be the inclusion of workshop sessions for the preparation of documents for submission to the CCIR.

Each symposium session will begin with an invited review paper which will include points of significance from the symposium papers, set in the context of a general review. Authors will then be given the opportunity of emphasizing important aspects of their papers in short oral presentations, followed by a period of general discussion. At the end of each day, the authors, chairman and reviewer for each session, plus national Commission F delegates, will be able to collaborate in workshop sessions preparing documents for approval by Commission F as inputs to the CCIR.

Synopses of approximately 500 words should be submitted before 30 September 1979, to the Chairman of the technical programme committee, Dr. P.A. Watson, University of Bradford Department of Electrical and Electronic Engineering, Great Horton Road, Bradford BD7 1DP, West Yorkshire, England. Final typescripts will be required for accepted papers before 20 February 1980.

Authors are asked to organise each of their papers so as to fall exclusively within one of the session topics. Papers presenting summaries of data from recent experimental programmes are welcome in several sessions, with the minimum of oral exposition. However, authors are encouraged to relate their data to meteorological models whenever possible.

1. Scattering from Hydrometeors

Including single particle calculations and measurements, evaluation of coherent and incoherent scattering contributions to extinction and cross-polarisation, multiple scattering, dispersion.

2. Prediction of Attenuation Due to Rainfall on Terrestrial Links

Methodology of prediction, rainfall models, rainfall intensity and climatic factors, statistical techniques, summaries of data from experimental programmes.

3. Clear-air Propagation on Line-of-Sight Radio Paths

Including scintillation and multipath fading, models for propagation in turbulence, ducts and internal waves, experimental investigations, techniques for prediction for terrestrial and low-angle satellite links.

4. Prediction of Attenuation Due to Rainfall on Earth-Space Links

Methodology of prediction for single-site and diversity attenuation, use of rainfall data, radar measurements, effect of bright band, climatological factors, frequency-scaling, summaries of data from experimental programmes.

5. Cross-polarisation on Terrestrial Links

Relationship between cross-polarisation and attenuation for rainfall, interpretation in terms of physical models, frequency-scaling, cross-polarisation during multipath.

6. Cross-polarisation on Earth-Space Links

Models for rain and ice-particle effects, assessment of relative importance of two effects, relationship between cross-polarisation and attenuation, frequency-scaling, data from experimental programmes.

7. Trans-Horizon Propagation

Tropospheric scatter propagation; models, prediction techniques, trans-horizon propagation in ducts; models and measurements. Bistatic rain scatter; models and measurements. Application to interference prediction and coordination between services.

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1980 INTERNATIONAL IEEE/AP-S SYMPOSIUM

AND

NORTH AMERICAN RADIO SCIENCE MEETING

Quebec City, Canada, 2-6 June 1980

The North American Radio Science Meeting, sponsored by the URSI Committees in Canada and the USA, and the International Symposium sponsored by the IEEE Antennas and Propagation Society (AP-S) will be held jointly at Laval University, Quebec City, Canada, 2-6 June 1980.

The technical sessions of the sponsoring bodies will be coordinated to provide a comprehensive and well-balanced programme.

Deadline for paper submission is 15 January 1980.

Further information about the joint meeting is available from:

Professor J.A. Cummins,  
Steering Committee Chairman,  
Université Laval,  
Quebec, P.Q., Canada,  
G1K 7P4.

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ELECTROMAGNETIC COMPATIBILITY SYMPOSIUM

Rotterdam, 1 - 3 May 1979

In 1975 and 1977, EMC symposia were held in Montreux. Because of the organisation of the CISPR Plenary Assembly in The Hague in 1979, it seemed attractive to choose Rotterdam this time. Prof. Borgnis (Zurich) remained Chairman of the Organisation Committee, but Prof. de Kroes (Chairman, Netherlands Electrotechnical Committee) became Chairman of the Symposium Council, and Mr. Derkx (Director of the Netherlands Normalization Institute) Vice-Chairman of the Symposium Council, with Prof. Leuthold. Prof. Stumpers was again Chairman of the Programme Committee, Dr. Dvarak, Technical Secretary and Editor of the Proceedings, and Mr. Gerritsen, Organizing Manager.

On Tuesday, 1 May, Dr. Leenman, Director General of

the Dutch PTT officially opened the Symposium. Mr. Hagn, Chairman of URSI Commission E, gave the keynote address, stressing the statistical approach to EMC, and URSI's willingness to cooperate with CCIR and CISPR in matters of spectrum management and measuring methods for radio interference. URSI acted as a cosponsor of this Symposium and was represented at the Opening Meeting by Dr. Minnis, Acting Secretary General.

Two sessions on Spectrum Management, and two sessions on the Nuclear Electromagnetic Pulse (NEMP) stressed important subjects. Mr. Kirby, Director of CCIR, and his collaborator Mr. Rutkowski reviewed the problems to be solved during the World Administrative Radio Conference in 1979. Professor Strusak, Vice-Chairman of CCIR Study Group I, chaired this session. The NEMP session, organised by Drs Tesche and Baum was the occasion for a good review of the activity in this field in the USA and Europe.

CISPR was well represented at the Symposium. Mr. Akerlind, Acting Chairman, spoke at the Opening Ceremony, and Prof. Showers, President Elect, chaired the session on measuring methods and production testing. Mr. Meyer de Stadelhofen, Past President, and several subcommission presidents were active too (Prof. Egidi, Mr. de Jong and Dr. Jackson). The IEEE EMC Group, a cooperating society, was represented by Mr. Hill. Plans for better international coordination of symposia were discussed. A round-table discussion on CISPR and Regional and National RF Interference Control and Measurement on Thursday afternoon attracted a large audience and stimulated a very lively discussion which continued until 17h30 on the last day.

The 18 sessions of the Symposium covered the whole field of EMC. A large exhibition, in which 23 firms participated, always had something interesting to show during the coffee breaks and also when participants preferred to look for new instruments themselves, rather than to listen to what others did with them. There was the usual get-together cocktail party on Tuesday evening and the banquet on Wednesday night.

One of the most difficult tasks of the Programme Committee was the preparation of the list of citations and prizes for good contributions. As always, it took quite a long time to reach agreement. Citations went to T. Takagi (Japan) (Characteristics of electrical discharge noise sources), A.P. Kalmakov (USSR) (Checking click sources

for compliance with CISPR limits) and W. Hadrian (Austria) (Conducting facades for lightning protection). The second prize was divided ex aequo between J. Hamelin (France) (Lightning discharge surges induced on overhead power lines), I.L. Gallon (UK) (EMP coupling to long cables), and J.J. Whalen (USA) (Predicting RFI effects in integrated circuits). The first prize was awarded to Dr. David Middleton (USA) (Implication of non-gaussian noise models for measurement and prediction of receiver performance) as a token of appreciation for his leading theoretical work in this field.

Prof. de Kroes gave a spirited after-dinner speech on international cooperation in general, and in EMC in particular. Taking into account the single-day participants, attendance, for the first time in Europe, exceeded the 500 mark. The unusually cold weather may have diminished the attraction of some of the organised trips (the tulips in De Keukenhof, visits to the town and the port facilities of Rotterdam) but, on the other hand, the level of the discussions and lectures was quite high, and hence there was some compensation for the participants who decided to stay indoors after all. There was an authors' lunch, to which the session Chairmen were invited, during which Prof. Stumpers had the opportunity to thank them all for their great help, and especially those who had sent in copies of their papers and abstracts well before the deadline.

Copies of the 600-page Proceedings of the Symposium Electromagnetic Compatibility 1979 are still available from the Netherlands Normalization Institute, Polakweg 5, Postbus 5810, Rijswijk, 2280 HV, Netherlands.

Mr. H.K. Mertel organised three workshops of a tutorial character. Seven ladies organised a tourist programme. All the meetings took place in "De Doelen", the conference complex in Rotterdam, and the entertainment included a free performance of Beethoven's Eighth Symphony by the Rotterdam Philharmonic Orchestra at lunchtime on Wednesday.

F.L.H.M. Stumpers

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NAMES AND ADDRESSES OF URSI OFFICERS  
AND OFFICERS OF MEMBER COMMITTEES

The amendments listed below refer to pages 7-24 of URSI Information Bulletin No 207 (December 1978). A full list of all names and addresses will be published in the December 1979 issue. Member Committees are invited to notify the URSI Secretariat before 15 November 1979 of any amendments to the information given in Bulletin No 207 and the present Bulletin.

1) The following amendments refer to the URSI Commissions:

Commission A

Add:

India: Dr. K. Chandra, Deputy Director, National Physical Laboratory, Hillside Road, New Delhi 110012, India (9).

Taiwan: Mr. Wan-Kao Hu, Department of Technical Service, Telecommunications Laboratories, DGT, MOC, P.O. Box 71, Chung-Li, Taiwan (10).

Commission B

Add:

India: Prof. G.S. Sanyal, Radar and Communication Centre, Indian Institute of Technology, Kharagpur 721302, India (11).

Substitute:

Canada: Prof. J.A. Cummins, Université Laval, Département du Génie Electrique, Cité Universitaire, Québec, P.Q. G1K 7P4, Canada (10).

Poland: Dr. S. Przewdziecki, Instytut Podstawowych Problemów Techniki PAN, Świetokrzyska 21, 00-049 Warszawa, Poland (11).

Taiwan: Prof. Chun-Hsiung Chen, Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan (11).



Commission C

Add:

Poland: Prof. J. Seidler, Instytut Telekomunikacji, Politechnika Gdańska, Majakowskiego 11/12, 80-952 Gdańsk-Wrzeszcz, Poland (12).

Taiwan: Prof. Chi-Fu Den, Department of Communication Engineering, National Chiao Tung University, Hsin-Chu, Taiwan (12).

Commission D

Add:

India: Prof. B.R. Nag, University College of Technology, Institute of Radio Physics and Electronics, 92 Acharya Prafulla Chandra Road, Calcutta 700009, India (12, 21).

Delete:

UK: Prof.E.A. Ash (new nomination awaited).

Commission F

Add:

India: Prof. B. Ramachandra Rao, University Grants Commission, Bahadurshah Zafar Marg, New Delhi 110002, India (14,21).

Working Group on Water Vapour

Members:

Mr. R.R. Burke (France)  
Mr. H.A. Gebbie (UK)  
Dr. H.J. Liebe (USA)  
Mr. J.W. Waters (USA)

Consultants:

Dr. Ed Altschuler (USA)  
Dr. G. Richards (USA).

Add to Alphabetical Index p.24:

ARMAND, Dr. N.A., Institute of Radioengineering and Electronics, Ac. Sci., Prospekt Marksa 18, Moskva, Centr, GSP-3, USSR (15).

Commission G

Add:

India: Prof. R.G. Rastegi, Solar Planetary Physics Division, Physical Research Laboratory, Navrangpura, Ahmedabad 380009, India (15).

Working Group G.9 - Abnormal Ionospheric Propagation:

Substitute:

Chairman: Dr. D.G. Cole, Ionospheric Prediction Service, P.O.Box 702, Darlinghurst 2010, Australia (17).

Add:

Members:

Argentina: A. Giraldez

Australia: D. Cole (Chairman)

Belgium: L. Bossy

Canada: D. Muldrew

Finland: T. Nygren

Germany, Fed. Rep.: J. Hortenbach

Japan: I. Kasuya (Vice-Chairman)

N. Matuura

K. Sinno

N. Wakai

New Zealand: W. Baggaley

R. Bennett

Sweden: H. Derblom

USA: E. Smith (Vice-Chairman)

K. Davies

C. Rush

R. Tsunoda

Working Group G.10 - International Digital Ionosonde Group (IDIG)

Amend as follows:

Chairman: Dr. J.R. Dudeney (UK)

Vice-Chairmen: Dr. K. Bibl (USA) and Dr. J.W. Wright(USA).

Commission H

Add:

India: Dr. J.S. Shirke, Physical Research Laboratory,  
Mavrangpura, Ahmedabad 380009, India (18).

Inter-Union Working Group on Wave Instabilities  
in Space Plasmas

Add:

Co-Chairmen: Dr. R. Gendrin, CRPE CNET-CNRS, 38 rue du  
Général Leclerc, F - 92131 Issy-les-Moulineaux,  
France (18).

Dr. P. Palmadesso, Code 6780, Naval Research  
Laboratory, Washington D.C. 20735, USA (18).

Commission J

Add:

India: Dr. N.V.G. Sarma, Raaman Research Institute,  
Hebbal P.O., Bangalore 560006, India (19).

Substitute:

UK: Dr. R.S. Booth, Nuffield Radio Astronomy Labora-  
tories, Jodrell Bank, Macclesfield, Cheshire  
SK11 9DN, UK, (19).

Amend:

France: Dr. J.C. Ribes, Institut National d'Astronomie et  
de Géophysique, 77 avenue Denfert-Rochereau,  
F - 75014 Paris, France (19).

2) The following amendments refer to URSI Member  
Committees:

German Democratic Republic

Substitute:

Secretary: Dr. A. Iwainy, Akademie der Wissenschaften,  
Zentralinstitut für Kybernetik und Informations-  
prozesse, Rudower chaussee 5, DDR - 1199 Berlin-  
Adlershof, German Democratic Republic (21).

Taiwan

Substitute:

President: Mr. Kang-Ping Liang, Directorate General of Telecommunications, Ministry of Communications, P.O. Box 84, Taipei, Taiwan (21).

Secretary: Prof. Mei-Hwa Wang, Engineering Department, Directorate General of Telecommunications, P.O. Box 84, Taipei, Taiwan (15, 21).

Nigeria

Amend:

President: Prof. I.E. Owolabi, Department of Electrical Engineering, University of Ilorin, Ilorin, Nigeria (15, 22).

The readers are kindly requested to make the appropriate changes on pages 24-46 of URSI Information Bulletin No 207.