

# International Scientific Radio Union

## U. R. S. I.

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## IN MEMORIAM

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### **Prof. Dr. A. Scheibe**

It is with a deep regret that we inform our readers of the death of Prof. Dr Adolf Scheibe, Chairman of Commission I of the German National Committee of U.R.S.I.

Adolf Scheibe was vice president of the Physikalisch-Technische Bundesanstalt and honorary professor at the Technische Hochschule Brunsvig. His outstanding work on crystal clocks together with Giebe, laid the basis of modern time controll. Using these clocks he was first able to show the minute irregularities of the revolution of the earth. His name will be linked forever with the development of time standards.

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## XII<sup>th</sup> GENERAL ASSEMBLY

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### **Report of U. S. A. National Committee to the National Academy of Sciences National Research Council**

*Publication n° 581, Publications Office of the National Academy of Sciences, 2101 Constitution Avenue, Washington 25, D. C., 195 pp., price \$ 2.50.*

It is a pleasure for us to mention the publication of this excellent Report of the U. S. A. National Committee to the National Academy of Sciences. Both were hosts of the U.R.S.I. XII<sup>th</sup> General Assembly and amongst the responsables of its organization and of its great success.

After having described the organization, the general programme, and the main decisions of the Executive Committee adopted by the General Assembly, the Report gives an extensive summary of the works made by the various Commissions during the meeting held in Boulder. Here will be found lively accounts of papers read at these sessions and of their discussions, as well as Resolutions of each Commission, and provisional lists of submitted reports and papers.

This report was not draft with the same aims as the Proceedings published by the General Secretariat of U.R.S.I.; it contains information useful to scientists interested to the activities of the Commissions, and shows the scientific cooperation which characterized the meeting.

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## **New regulation for travel and subsistence**

The following rules were adopted at the XIIth General Assembly of U.R.S.I. :

### *A. — Travelling Expenses*

Travelling expenses will be reimbursed, in the currency in which the tickets were bought, against a claim made on the form drafted by the Secretary General.

Travel is permissible at the following rates :

*Rail* : Ordinary first class seats or sleepers.

*Air* : Normally at tourist rates. First class rates are permissible whenever an overnight journey is involved.

*Sea* : At a rate not exceeding the first class air fare.

### *B. — Subsistence Allowances*

Subsistence allowances will be paid at the place of meeting at the following rates :

*Standard rate* : The standard rate is 15 dollars for each night spent at the place of meeting.

*Special rates* : For Canada, U. S. A., U. S. S. R., France (Paris) and Japan, the rate is 18 dollars a night.

*Rates en route* : The following additional per diem expenses may be claimed, for reimbursement together with the travelling expenses :

6 dollars per 24 hour period spent on a train.

3 dollars per 24 hour period spent on board ship or aircraft.

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## Proceedings

Part 4 of Volume XI (Proceedings of Commission IV) is out of press. Copies have been forwarded to National Committees which have informed the Secretary General of their requirements (Letter n° 386 of the Secretary General, October 1957, and *Information Bulletin*, n° 106, p. 18).

Supplementary copies are available at the General Secretariat at the price of B. F. 150.—, or \$ 3, or £ 1/11/6 per copy (postage included).

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## NATIONAL COMMITTEES

### New scale of subscription

The following National Committees should be added to the lists published in the *Information Bulletin*, n° 105, 106 and 107 :

United Kingdom : category 6 (4000 \$).

Yugoslavia : category 3 (500 \$).

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### Germany

#### ANNUAL MEETING

The annual meeting of the German National Committee of U.R.S.I. was held jointly with the Working Group Ionosphere and the Professional Group on Wave Propagation of the Nachrichtentechnische Gesellschaft at Kleinheubach/Main on April 9 to 12, 1958. It was attended by about 100 German scientists and guests from Austria, Netherlands, Sweden, Switzerland, Czechoslovakia, and U. S. A. Some 70 papers were presented concerning the following topics : Tropospheric wave propagation, observations of artificial satellites, ground wave propagation, spherics, ionospheric wave propagation, solar and cosmic observations. Reports were given on the Boulder meeting of U.R.S.I., and the Board of Officers was elected. The papers will be published in a special volume which may be obtained from the Secretary of the German National Committee. A limited number of the proceedings of former meetings is available still.

#### BOARD OF OFFICERS

During the annual meeting of the German National Committee of U.R.S.I. held in April 1958 the following Board of Officers has been elected :

*President* : Prof. Dr. W. DIEMINGER, Lindau/Harz.

*Secretary* : Dr. H. FLEISCHER, Darmstadt.

*Chairman of Commission I* : Prof. Dr. A. SCHEIBE, Braunschweig.

*Chairman of Commission II* : Dr. J. GROSSKOPF, Darmstadt.

*Chairman of Commission III* : Prof. Dr. W. DIEMINGER, Lindau/  
Harz.

*Chairman of Commission IV* : Prof. Dr. A. EHMERT, Weissenau.

*Chairman of Commission V* : Prof. Dr. F. BECKER, Bonn.

*Chairman of Commission VI* : Dipl.-Ing. A. HEILMANN, Darm-  
stadt.

*Chairman of Commission VII* : Prof. Dr. H. RUKOP, Ulm.

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## Morocco

### MEETING OF THE NATIONAL COMMITTEE

At its meeting held on April 17th, 1958, the Morocco National Committee, U.R.S.I., elected the following officers :

*Board :*

*President* : M. SABBAB, Chef de Cabinet du Ministre des PTT,

*Vice-President* : Mr. LACROZE, Directeur-Adjoint, Ministère des  
P.T.T., Chef des Services des Télécommunications.

*Secretary* : M. HAUBERT, Ingénieur en chef des Télécommuni-  
cations, Institut Scientifique Chérifien, Rabat.

*Member* : Mr. ARZELIES, Professeur à la Faculté des Sciences.

*Official Members of Commissions :*

Commission I : Mr. ARZELIES, Faculté des Sciences, avenue Biarnay,  
Rabat.

Commission II : Mr. MONTJOIN, Ingénieur en Chef des Télécom-  
munications, Ministère des P.T.T., Rabat.

Commission III : Mr. HAUBERT, Ingénieur en chef des Télécom-  
munications, Institut Scientifique Chérifien, Rabat.

Commission IV : Mr. LEGRAND, Chef du Centre de Réception  
Radioélectrique, avenue Biarnay, Rabat.

Commission V : Mr. HAUBERT, Ingénieur en chef des Télécommu-  
nications, Institut Scientifique Chérifien, Rabat.



Commission VI : Mr. MERCIER, Doyen Honoraire et Professeur  
à la Faculté des Sciences de Bordeaux.

Commission VII : Mr. BARRADA, Chef du Service Technique de  
Radio-Maroc, Rabat.

The Committee examined a draft on the organization of General  
Assemblies in the future, presented by the Board of Officers of  
U.R.S.I. No objection was raised but on the contrary the proposed  
regulations seemed to be judicious.

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## U. S. A.

### OFFICERS

*Chairman* : Dr. W. E. GORDON,

*Vice-Chairman* : Dr. J. P. HAGEN.

*Secretary* : Dr. S. SILVER,

*Treasurer* : Prof. A. H. WAYNICK.

*Associate Editor of Information Bulletin* : Dr. M. G. MORGAN.

### EXECUTIVE COMMITTEE

*Current National Officers* : Dr. W. E. GORDON, Dr. J. P. HAGEN,  
Dr. S. SILVER, Prof. A. H. WAYNICK, Dr. M. G. MORGAN.

*Junior Past Chairman* : Mr. H. W. WELLS.

*International Officers* : Dr. L. V. BERKNER, Dr. J. H. DELLINGER,  
Dr. R. A. HELLIWELL, Dr. W. G. SHEPHERD, Dr. S. SILVER.

### COMMISSION CHAIRMEN

1. Radio Measurement Methods and Standards, Mr. R. W. BEATTY.
2. Tropospheric Radio Propagation, Mr. Irvin H. GERKS.
3. Ionospheric Radio Propagation, Prof. Laurence A. MANNING.
4. Radio Noise of Terrestrial Origin, Mr. William Q. CRICHLow.
5. Radio Astronomy, Mr. E. F. McCLAIN.

6. Radio Waves and Circuits, Dr. John I. BOHNERT,  
Sub-Commission 6.1 : Information Theory, Prof.  
L. A. ZADEH.  
Sub-Commission 6.2 : Circuit Theory, Prof. L. A. ZADEH.  
Sub-Commission 6.3 : Antennas and Waveguides, Dr. John  
I. BOHNERT.
7. Radio Electronics, Prof. Marvin CHODOROW.

## NATIONAL COMMITTEE

### MEMBERS

- Mr. E. W. ALLEN, Jr., Federal Communications Commission,  
7515, New Post Office Building, Washington 25, D. C.
- Mr. S. L. BAILEY, Jansky and Bailey, Inc., 1339, Wisconsin Ave.,  
N. W., Washington 7, D. C.
- Mr. R. W. BEATTY, National Bureau of Standards, Boulder,  
Colorado.
- Dr. L. V. BERKNER, Associated Universities, Inc. 10, Columbus  
Circle, New-York, 19, N.-Y.
- Dr. H. H. BEVERAGE, RCA Laboratories, Inc., Rocky Point,  
New-York.
- Dr. John I. BOHNERT, Code 5200, Naval Research Laboratory,  
Washington 25, D. C.
- Rear Adm. H. C. BRUTON, USN (until 8-1-58), Director, Naval  
Communications (Op-30), U. S. Navy, Washington 25, D. C.
- Prof. Marvin CHODOROW, W. W. Hansen Laboratories of Physics,  
Stanford University, Stanford, California.
- Mr. William Q. CRICLOW, National Bureau of Standards, Boulder,  
Colorado.
- Dr. J. Howard DELLINGER, 3900, Connecticut Avenue, N. W.  
Washington 8, D. C.
- Mr. Frederic H. DICKSON, Signal Radio Propagation Agency,  
Fort Monmouth, New-Jersey.
- Mr. Harold E. DINGER, Code 5416, Naval Research Laboratory,  
Washington, D. C.

- Dr. Rufus G. FELLERS, Division of Electrical Engineering, University of South Carolina, 745, Sumter Street, Columbia, South Carolina.
- Mr. I. H. GERKS, Collins Radio Company, Cedar Rapids, Iowa.
- Prof. W. E. GORDON, School of Electrical Engineering, Cornell University, Ithaca, New-York.
- Prof. Fred T. HADDOCK, The Observatory, University of Michigan, Ann Arbor, Michigan.
- Dr. John P. HAGEN, Code 4100, Naval Research Laboratory, Washington 25, D. C.
- Dr. Robert A. HELLIWELL, Electronics Research Laboratory, Stanford University, Stanford, California.
- Mr. A. G. JENSEN, Director of Visual and Acoustics Research, Bell Telephone Laboratories, Murray Hill, New Jersey.
- Dr. E. C. JORDAN, Dept. of Electrical Engineering, University of Illinois Urbana, Illinois.
- Mr. John E. KETO, Technical Director, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.
- Mr. George LUKES, Executive Secretary, Defence Science Board, OASD (R and E), Room 3E1027, The Pentagon, Washington 25, D. C.
- Prof. Laurence A. MANNING, Electronics Research Laboratory, Stanford University, Stanford, California.
- Mr. Edward F. McCLAIN, Code 7135, Naval Research Laboratory, Washington 25, D. C.
- Dr. Millett G. MORGAN, Thayer School of Engineering, Dartmouth College, Hanover, New Hampshire.
- Mr. Kenneth A. NORTON, National Bureau of Standards, Boulder, Colorado.
- Dr. Brian O'BRIEN, Chairman, Division of Physical Sciences, National Research Council, 2101, Constitution Avenue, N. W. Washington 25, D. C.
- Maj. Gen. James D. O'CONNELL, Chief Signal Officer, U. S. Army, Room 2E258, the Pentagon, Washington 25, D. C.
- Maj. Gen. Alvin L. PACHYNSKI, Directorate of Communications-Electronics, U. S. Air Force, Room 5B479, the Pentagon, Washington 25, D. C.

- Dr. R. M. PAGE, Code 5000, Naval Research Laboratory, Washington, 25, D. C.
- Mr. Alan H. SHAPLEY, National Bureau of Standards, Boulder, Colorado.
- Dr. W. G. SHEPHERD, Dept. of Electrical Engineering, University of Minnesota, Minneapolis, Minnesota.
- Dr. Samuel SILVER, Division of Electrical Engineering, University of California, Berkeley 4, California (004-370).
- Dr. Ralph J. SLUTZ, National Bureau of Standards, Boulder, Colorado.
- Dr. J. B. SMYTH, Smyth Research Associates, 3555, Aero Court, San Diego 11, California.
- Dr. L. C. VAN ATTA, Research Laboratories, Hughes Aircraft Company, Culver City, California.
- Rear Admiral Frank VIRDEN, USN, Director, Naval Communications (Op-30), U. S. Navy, Washington 25, D. C.
- Prof. A. H. WAYNICK, Dept. of Electrical Engineering, Pennsylvania State University, University Park, Pennsylvania.
- Dr. Ernst WEBER, Microwave Research Institute, Polytechnic Institute of Brooklyn, 99, Livingston Street, Brooklyn 1, New-York.
- Mr. H. W. WELLS, Carnegie Institution of Washington, 5241, Broad Branch Road, N. W., Washington 15, D. C.

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## Japan

### SCIENCE COUNCIL

We have been informed by the Secretary General of the Science Council of Japan that the following members were elected as the executive Officers of the Council :

*President* : Dr. Kankuro KANESHIGE, Professor of Mechanical Engineering, University of Tokyo ;

*Vice-President* (for Natural Sciences): Dr. Kiyoo WADATI, Director, Meteorological Agency.

Dr. Ichiro NAKAYAMA, Professor of Economics, Hitotsubashi University, remains as Vice-President (for Humanities and Social Sciences).

## COMMISSIONS

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### Commission III On Ionospheric Radio

#### ELECTRON DENSITY PROFILES IN THE IONOSPHERE DURING THE I.G.Y.

(Official communication from  
the D.S.I.R. Radio Research Station, Slough, England)

1ST APRIL, 1958

In many parts of the world during the last twenty years, regular measurements have been made of the maximum electron density ( $N_m$ ) and the approximate true height ( $h_m$ ) of the various layers in the ionosphere. Both these parameters can be obtained fairly easily from the  $h(f)$  curves (ionograms) which are produced by automatic pulse-sounding equipment and tabulated values of  $N_m$  and  $h_m$  are generally available. On the other hand, only an extremely small amount of accurate information is available on  $N(h)$  profiles, the distribution of electron density with height in the ionosphere, and how these profiles vary with time, season and geographical location. It follows that very little is known about the variation of  $N$  with time at a constant true height (the  $N(t)$  curve). The ionograms contain all this information but the mathematical procedure for deriving an  $(Nh)$  profile from an  $h(f)$  curve is very laborious, especially if the effect of the geomagnetic field is taken into account. Fortunately electronic computers are now available and they have opened up a new era in this field since they can readily be used to compute  $N(h)$  profiles from ionograms.

The purpose of this note is to outline the scope of a programme of such computations which has been organized by the Radio Research Station, of the Department of Scientific and Industrial Research, at Slough and which forms part of the United Kingdom

programme of observations during the International Geophysical Year. The  $N(h)$  profiles are being produced by Ferranti, Ltd. on a « Pegasus » automatic digital computer using  $h'(f)$  data obtained at the four observatories listed in Table I.

TABLE I

Observatory	Location
Slough .....	51°29' N ; 00°34' W
Ibadan .....	07°26' N ; 03°54' E
Singapore .....	01°19' N ; 103°49' E
Port Stanley .....	51°42' S ; 57°51' W

For each observatory profiles are being calculated for each hour of the day for about four days per month beginning in July 1957. When the ionograms are suitable, Regular World Days are selected for analysis ; when this is not practicable, other days are substituted. This programme will be continued until December 1958 when the possibility of extending the work will be considered.

The analysis is carried out according to a method which has recently been described (1) and which makes no « a priori » assumptions about the variation of electron density with height except that it increases monotonically. It can be applied to  $h'(f)$  curves from any observatory merely by changing the geomagnetic dip angle and the gyro-frequency, both of which are taken into account in the calculations. A fuller account of the use of a digital computer to carry out the calculations is in preparation and will be available later (2).

The production of  $N(h)$  profiles is now proceeding on a routine basis and the computer has been programmed to print out the data in the form shown in table 2 from which either the  $N(h)$  or  $N(f)$  variations can easily be extracted. It has also been found convenient to have the values of  $hmF2$  and  $NmF2$  computed and printed out at the bottom of the tables together with  $h_o$  and  $N_o$ , the height and electron density at the base of the E or F layer as appropriate.

TABLE 2

$N(h)$  PROFILES (UNIT OF ELECTRON DENSITY  $10^5 \text{ CM}^{-3}$ )

Port Stanley (Falkland Islands)

27th July, 1957

Local Mean Time

$h(\text{km})$	0000	0100	0200	0300	0400	0500	0600	0700
420	1.57							
410	1.53	1.68	1.76	1.65	1.78			
400	1.44	1.65	1.73	1.58	1.74			
390	1.28	1.61	1.70	1.46	1.69			
380	1.10	1.50	1.62	1.29	1.60			
370	0.85	1.36	1.50	1.10	1.45			
360	0.40	1.17	1.34	0.81	1.25	1.85		
350		0.82	1.13	0.28	1.03	1.80		
340			0.80		0.50	1.70		
330						1.56		
320						1.36		
310						1.11		
300						0.59	2.07	
290							2.01	
280							1.93	
270							1.77	
260							1.57	3.31
250							1.16	3.14
.								.
.								.
.								.
200								0.79
.								.
.								.
160								0.21
$hmF_2$	429	415	418	419	412	366	302	263
$NmF_2$	1.61	1.70	1.79	1.70	1.79	1.89	2.09	3.35
$h_o$	360	345	335	350	340	295	245	160
$N_o$	0.40	0.28	0.36	0.28	0.50	0.12	0.28	0.21

Microfilm copies of the tables will be sent to the four I.G.Y. World Data Centres which collect ionospheric data at Boulder, Moscow, Slough and Tokyo. A limited number of booklets containing the tables will also be available.

REFERENCES

1. THOMAS, J. O., HASELGROVE, and ROBBINS, A. R. — «The Electron Distribution in the Ionosphere over Slough; Quiet Days». *J. Atmos. Terr. Phy.* (1958), **13**, 46-56.
2. THOMAS, J. O. and VICKERS, M. D. — «The Reduction of  $h'(f)$  Records to  $N(h)$  Profiles using an Electronic Digital Computer». In course of publication.

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**Commission V**

**On Radio Astronomy**

**THE NATIONAL RADIO OBSERVATORY**

**(GREEN BANK, WEST VIRGINIA)**

This radio-astronomical observatory is being built and operated by the Associated Universities, Inc. under contract with the National Science Foundation. Amongst the principal instruments whose construction has already been decided is a 85-*ft* radio-telescope allowing observation at wave-lengths as short as 3 cm and a 140-*ft* radiotelescope which will be one of the largest instruments in the world and probably the most precise. It is further hoped to erect a 300-*ft* telescope to be a precursor for a larger one, the 600-*ft* telescope, perhaps the largest steerable paraboloid to be built.

To celebrate the beginning of the works at Green Bank, West Virginia, where the National Radio-Observatory will be located (October 17, 1957), the Associated Universities published a very interesting booklet with a general description of the observatory and of the sponsoring institutions, and with an excellent chapter on what is Radio Astronomy presently representing to Science. The installation of the first two large paraboloids is expected for 1958-1960. The institution will be largely open to scientists and will provide them great possibilities for astronomical research.

The National Science Foundation established in 1950 to promote research and education in Science, also supports, on a limited basis, facilities of a kind that cannot be provided except with Federal aid. Associated Universities is sponsored by nine north-eastern U.S. universities and already counts amongst its realization



the well known Brookhaven National Laboratory with the 30 billions eV proton accelerator, under contract with the Atomic Energy Commission. The President of Associated Universities, Dr. L. V. Berkner, is also President of I.C.S.U. and U.R.S.I.

### PREDICTION OF SOLAR INDEX

Reprint from *Journal UIT*, n° 5, May 1958

The VIIIth Plenary Assembly of the C.C.I.R. (Warsaw, 1956) asked the Director of the C.C.I.R. (see Recommendation n° 172, Volume I of the documents of the VIIIth Plenary Assembly of the C.C.I.R.) to publish predictions as soon as practicable, with an indication of an estimated probable error, while continuing the studies on this subject.

In view of the great difficulties involved in solving this problem, especially when the exceptional nature of the present cycle is taken into account, the Director of the C.C.I.R. has deemed it advisable to publish henceforth, in the *Journal*, the monthly predictions supplied by the Federal Observatory of Zurich. He takes the present opportunity of thanking Professor Waldmeier for his kindness in authorizing this publication.

The 12-month smoothed average predictions of the sunspot numbers for the next six months are given below :

May 177	July 167	September 159
June 172	August 163	October 155

The Director of the C.C.I.R. also wishes to point out that the short-wave station of Schwarzenburg broadcasts information about sunspot numbers. Details of these broadcasts are given in the following table and are valid from 1 May to 31 October 1958.

Destination of broadcast	Day of month	Universal Time	Frequency (kc/s)			
United Kingdom . . . . .	4	13.50	7210	9665		
North America . . . . .	5	01.35	6165	9535	11865	15305
		04.20		9535	11865	
Australia, New Zealand	5	0.720	11865	15305	21520	
		09.05				

Destination of broadcast	Day of month	Universal Time	Frequency (kc/s)		
South-East Asia, Japan	5	12.50	15305	17784	21520
India, Pakistan, South Africa .....	5	14.50	11865	21605	
Near East .....	5	16.50	17784	21605	
Spain and Portugal ...	4	21.15	9665	11865	
South America .....	} 4	23.30	9535	11865	15315
		5	03.45	9535	11865

DR. E. METZLER, Director of the C.C.I.R.

**Commission VI**  
**On radio waves and circuits**

**SUB-COMMISSION VI-1**  
**ON INFORMATION THEORY**

**Bibliography on Communication Theory**

We want to inform our readers that Supplement n° 4 to the Bibliography on Communication Theory has been issued by the C.C.I.R.

## URSIGRAMS

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### **Meeting of the European Ursigram Committee**

**on May 6-7, 1958, at the Royal Observatory,  
Uccle-Brussels, Belgium**

#### FOREWORD

According to decisions reached at the XIIth General Assembly of U.R.S.I. in Boulder (1957), the new organization of the Permanent Ursigram Service may be worded as follows <sup>(1)</sup> :

(a) *The Central Committee on Ursigrams*, including official members appointed by the Regional Committees (one for each Committee) with the addition of the Secretary General of U.R.S.I., ex officio. Provisionally, the Members are Father Lejay (Europe and Africa), M. Shapley (Western Hemisphere), Dr. Pushkov (Eurasia), Dr. Uyeda (Far East) and Col. Herbays, Secretary General of U.R.S.I. This Committee has the power to appoint consultant members representing Unions and organizations interested in Ursigrams. The duties of the Central Committee are to coordinate interchanges between regions, content and communication of messages interesting two or more regions, to assume the maintenance and the distribution of all the codes used, to unify or, at least, to make the codes as homogeneous as possible in a manner suitable to the possibilities of observation and needs of users. Moreover the Central Committee will act as Executive body of the Ursigram Service for the relation with other international organizations such as the F.A.G.G.S. (Federation of Permanent Services for Astronomy, Geophysics and related

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<sup>(1)</sup> Ursigrams : Reorganization, *Information Bulletin*, n° 108, p. 26 March-April, 1958.

Sciences of I.C.S.U.) of which the Ursigram Service is now a member.

(b) *Four Regional Committees* (see a), the members of which are appointed by the U.R.S.I. National Committees. These Regional Committees are entrusted with the collecting of all data obtained by stations inside their regional grouping, the distribution of such data, the drafting of summaries to be distributed in a convenient form to other regional groups.

According to Boulder decisions, the European Committee has held in Brussels, on May 6-7, 1958, its closing session in view of its reconstitution into the European Regional Committee on Ursigrams. Were present :

Father LEJAY, *Chairman*,

Col. HERBAYS, *Secretary General of U.R.S.I.*,

Dr. MENZEL, from I.T.U.,

Dr. BECKMANN (Germany), Father CARDUS (Spain), Dr. COUTREZ (Belgium), Mr. DELOUF (France), Ing. DE VOOGT (Netherlands), Dr. DE FEITER (Netherlands), Dr. GEJER (Sweden)  
Dr. HAUBERT (Morocco).

*Excused* : Father ROMANA (Spain), Dr. MRAZEK (Czechoslovakia) ;

*Observer* : Mr. VAN GILS (Belgium).

*Secretary of the session* : Dr. COUTREZ.

By telegram, Dr. Mrazek and Prof. Giorgi wished success to the conference.

#### I. — AGENDA

This agenda included the following items :

1. Decisions taken in Boulder.
2. Nomination of the European National Committee. Appointment of a provisional Secretary and of a Drafting Committee.
3. Delimitation of the geographical zone under power of the European Regional Committee.
4. Activities of the European Regional Committee.
5. Improvement of the European Ursigram network.

6. Examination of the Ursigram codes.
7. Advice of the European Committee on the organization of World Days after I.G.Y. termination.
8. Recommendations to the Central Committee on Ursigrams.
9. Miscellaneous.

Owing to the importance of such a reorganization, it is wished by the Committee that the Proceedings of its present session, the Resolutions reached be published in the *U.R.S.I. Information Bulletin*, in the *U.G.G.I. Bulletin*, and communicated to the other interested Unions.

## II. — DECISIONS REACHED IN BOULDER

It appeared clearly that the role of the various Ursigram Committees must be defined in such a way to maintain the sponsorship of U.R.S.I. and the support of other national and international organizations. The opinion of the European Committee was expressed in the following Resolutions :

### *Resolution 1*

« The European Committee on Ursigrams considers that Regional Committees must be completely independent for the organization of their work and for the designation of their members, taking into account research requirements, means of dissemination available, and needs expressed by users. »

### *Resolution 2*

« The European Committee considers that the aims of the Central Committee on Ursigrams should include 1°) *the coordination* of problems common to the different Regional Committees, avoiding any interference with the activities of such Committees, 2°) *the consideration* of questions needing cooperation with other international organizations. »

### *Resolution 3* (taken in consequence of Resolution 2)

« The European Committee approves the principle that the Central Committee be constituted with the Chairmen of the Regional Committees and the Secretary General of U.R.S.I. It is found very desirable that the Central Committee ensures the collaboration with I.T.U. and with Scientific Unions interested in Ursigrams. »

III. — GEOGRAPHICAL ZONE OF POWERS.  
PROPOSALS FOR MEMBERSHIP

The list of countries in the European regional grouping was examined. It was decided to adopt, for convenience, the regional grouping of I.G.Y. and to give special attention to countries already participating actively in the Ursigram service even if these countries are not represented in U.R.S.I. Moreover it appeared clearly that such a regional grouping has no political meaning and that there is no difficulties for admitting some countries in several regional groupings.

Consequently, the following Resolutions were adopted :

*Resolution 4*

« The European Committee accepts the list of countries in the regional grouping established during the I.G.Y. without giving to it any political significance. In its opinion, there is no difficulties for admitting some countries in several regional groupings. »

*Resolution 5*

« According to the recommendation adopted at the XIIth General Assembly of U.R.S.I., the European Committee decides to invite from now the U.R.S.I. National Committees and the following countries, participating at the present time in Ursigram activities, to appoint an official delegate to constitute the new Regional European Committee :

Austria, Belgium, Czechoslovakia, Eire, India, Italy, Finland, France, Germany, Greece, Morocco, Netherlands, Norway, Spain, Sweden and United Kingdom. »

It was decided to suggest the following names to the National Committees of the various countries of the European Region :

- Austria : Dr. BURKARD.
- Belgium : Dr. COUTREZ (*Secretary*).
- Czechoslovakia : Dr. MRAZEK.
- Eire : Mr. DOPORTO.
- Finland : Dr. HEINO.
- France : Father LEJAY (*President*).
- Germany : Dr. BECKMANN.

Greece : Dr. MACRIS.  
India : Dr. DAS.  
Italy : Prof. GIORGI.  
Morocco : Dr. HAUBERT.  
Netherlands : Ing. DE VOOGT.  
Norway : Dr. HARANG.  
Spain : Father CARDUS.  
Sweden : Dr. GEJER.  
United Kingdom : Dr. SMITH-ROSE.

It appeared desirable that every country appoints one official member, and eventually, several consulting members ; it is wished that such appointments be made after consultation of National Committees of interested Unions and authorities responsible for telecommunications in the various countries.

The European Regional Committee has been placed under the chairmanship of Father Lejay, already representing Europe at the Central Committee.

At the unanimity, Dr. Coutrez was proposed as Secretary of the European Regional Committee on Ursigrams.

Besides, the Committee found desirable that U.R.S.I. National Committees be invited to appoint Sub-Committees for Ursigrams. For such appointments, individuals should be chosen amongst personalities competent in Ursigram disciplines, even if they are not members of National Committees. In consequence, the following Resolutions were adopted.

#### *Resolution 6*

« The National Committees should be invited to make the appointments mentioned in Resolution 5. after consultation with National Committees of interested Scientific Unions and in each country with authorities in charge of telecommunications. »

#### *Resolution 7*

« The European Committee decides to invite National Committees to delegate at its meetings individuals competent in the various Ursigram disciplines, whether these individuals are members or not of U.R.S.I. National Committees. »

*Resolution 8.*

« The European Committee resolves that a representative of I.T.U. should be invited to its meetings. »

*Resolution 9*

« The European Committee wishes that U.R.S.I. National Committees form Sub-Committees for Ursigrams, with individuals competent in the various disciplines. »

IV. — OPINION OF THE EUROPEAN COMMITTEE ON THE ORGANIZATION OF GEOPHYSICAL DAYS AFTER THE I.G.Y. — LOCAL ALERTS

At the President's request, the Secretary General of U.R.S.I. read a proposal made by the C.S.A.G.I. Reporter for World Days and Communications in view of establishing a Mixed Commission of I.C.S.U. on Alerts and Special World Intervals after the I.G.Y. termination. Such a proposal has been accepted by the C.S.A.G.I., and transmitted to I.C.S.U., which is undertaking a consultation of its members. The U.R.S.I. Board of Officers resolved at its Brussels meeting (March 6-8, 1958) to refer the question to the C.C.U. The opinion of the European Committee was wished to enlighten the C.C.U. on this subject.

The European Committee decided to adopt the principle of *regular* days of coordinated observations and made the following Resolution :

*Resolution 10*

« In order to tighten observations of phenomena requiring effective cooperation between stations in the field of solar activity and its geophysical repercussions, it is decided :

to adopt a *calendar of regular days* of coordinated observations, during which participating observatories should be invited to proceed, in the limits of their possibilities, to sustained measurements with a maximum efficiency.

This method would allow the observatories to make simultaneous measurements. It is proposed to adopt from January 1st, 1959, *the first Wednesday of each month* as a regular day. Measurements are particularly recommended during disturbed conditions, those being clearly defined by the Ursigrams. »

It appeared also that the organization of *special* world days



might be resumed in the next future, when sufficient criteria for prediction and alert decision have been obtained, and that the attention should be drawn principally on the analysis of observations already made and on the research of adequate criteria. Consequently, the following Resolutions are adopted :

*Resolution 11*

« Experience showing that it is not yet possible to give the precision and definition desirable to current criteria used until now for decisions of World Alerts or Special World Intervals,

that the results obtained in the various observatories in view of establishing these World Alerts as well as during these Special Intervals are not, due to this fact, completely used nor usable,

and that, on the other hand, it would not be suitable to require in participating stations a sustained effort out of proportion with the pursued aims,

it is advised not to support for the present time the formation of a unique organism (or a Joint Commission of I.C.S.U.) for the continuation of *special* observing days based on such criteria, at the planetary scale, after the I.G.Y. termination,

but to investigate on a scientific basis which are the criteria to be used for the improvement of predictions and the effective resumption of special days in the future, in the Regional Ursigram Committees, in the C.C.U., and in other organizations. »

*Resolution 12*

« It is wished that the regular Ursigram messages be preceded of *advices from stations* on disturbed conditions. For this purpose, it seems suitable to draft, eventually by correspondence between the members of the European Ursigram Committee, a code giving the indicator of the station, the advice, the nature of the disturbance, and its importance in a conventional scale. These advices should be drafted by the stations, transmitted to the centres, and disseminated by them with the noon or evening regular Ursigrams. Such advices could give to the interested observatories the possibility to make tightened measurements in conditions favouring discovery, and to the users the possibility to conduct their techniques in a more adequate manner. »

*Resolution 13*

« It seems suitable to complete the system of regular Ursigrams emitted by the centres, with *special Ursigrams* sent to the other centres of the European region and to interested stations. Such special Ursigrams should be transmitted by telex as soon as possible, and only in the case of very marked solar and geophysical disturbances. »

*Resolution 14*

« Since it is not possible at the present time to define criteria for predicting solar activity phenomena (flares, bursts, etc.), and since the question of transmission delay is essential in this kind of studies, it seems suitable to consider a system of advice *from observatory to observatory*, between selected stations provided with telex, in order to allow closer observations of solar phenomena in rapid evolution. The informations obtained in this manner should be communicated to the European centres together with ordinary Ursigram messages. »

*Resolution 15*

« The European Committee draws attention to the decision taken at the Bagneux meeting, September 1955, on the transmission of messages towards the western centres and on the interest to receive also, as soon as possible, messages related with solar observations made at the eastern stations. »

Lists of observatories making detailed measurements will be published in the *U.R.S.I. Information Bulletin*. A draft of code on disturbed conditions was also examined.

V. — URSIGRAM CODES.

IMPROVEMENT OF THE EUROPEAN NETWORK

Attention was drawn to the interest to publish all the Ursigram codes as soon as possible. Work undertaken at the U.R.S.I. General Secretariat in this respect was described. The codes will be published in a catalogue containing general considerations on the Ursigram service, brief description of mentioned phenomena (the complete list of observatories with indicators and kind of messages transmitted, the codes grouped in species (solar, ionospheric, etc.) and general conclusions. The following Resolution was adopted by the European Committee.

*Resolution 16.*

« The European Committee on Ursigrams expresses the wish that all Ursigram codes be published as soon as possible in the two U.R.S.I. official languages, and that any modification brought to the codes in the future be announced sufficiently in advance ».

Means to improve communications with Ursigram centres and to avoid transmission errors were discussed, and dispositions were taken for future work.

VI. — OTHER RESOLUTIONS

The Committee underlined the importance of the cooperation with I.T.U. and administrations responsible for communications in the following Resolution :

*Resolution 17*

« The European Committee on Ursigrams expresses its heartfelt thanks to I.T.U. and to authorities responsible for telecommunications in the various countries, for their efficient collaboration and for facilities granted for transmission of messages. The Committee expresses its hope that such a cooperation will become stronger in the future with the new European Regional Committee, in order to promote interchanges favourable to scientific research and to the conduct of techniques. »

On the proposal of the Secretary General of U.R.S.I., the following Resolution was taken :

*Resolution 18*

« The European Committee on Ursigrams expresses its gratefulness to the Director of the Royal Observatory of Belgium for his kind welcome to the participating members during the meeting on May 6-7, 1958, at the Observatory. The spontaneous aid the European Committee encountered at the Royal Observatory contributed greatly to the success of its work. »

It was also decided to invite the Secretary General of U.R.S.I. to send the Resolutions to U.R.S.I. National Committees, and for information, to the Members of the U.R.S.I. Board of Officers and to the C.C.U. The Secretary General will write to National Committees to advise them on the proposed membership of the European Regional Committee. The Secretary of the European

Committee will also write to the individuals proposed for membership.

Col. Herbays, Secretary General of U.R.S.I., presented his thanks to Father Lejay, Chairman, and congratulated him for the manner with which he has led the work of the Committee. The Chairman thanked the members, whose work insured the success of the conference, and closed the meeting after exhaustion of the agenda.

*The Secretary,*

R. COUTREZ

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## C. C. I. R.

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### **U.R.S.I. Delegation to the IX Plenary Assembly of C.C.I.R.**

#### Letter to all National Committees

Dear Mr. President,

I am pleased to inform you that the Ninth Plenary Assembly of the International Radio Consultative Committee (C.C.I.R.) will take place at the Biltmore Hotel, Los Angeles, California, April 2 to 30, 1959. The U.R.S.I. will be officially represented by a delegation under the chairmanship of Dr. J. H. Dellinger, Honorary President.

Members of your National Committee who will attend the meeting are kindly requested to serve as members of the U.R.S.I. delegation. I shall be pleased to learn their names, as soon as the information becomes available.

It is to be noted that C.C.I.R. Study Groups I, II, III, IV, V, VI, VII, IX are to meet in Geneva in July-August of this year. The U.R.S.I. will not have a delegation at those meetings, but U.R.S.I. members who are present can aid in promoting the coordination of C.C.I.R. and U.R.S.I. work. I suggest that you give each such person the suggestion that he do what he can to insure that C.C.I.R. topics referred to U.R.S.I. make as specific requests as possible. I would also appreciate it if you would inform me the names of such persons. All of this will aid in making more significant the U.R.S.I. participation in the 1959 Plenary Assembly of C.C.I.R.

Yours very sincerely,

*Secretary General,*  
HERBAYS.

DOCUMENTS RECEIVED  
AT THE GENERAL SECRETARIAT

STUDY GROUP N° III

*Fixed service systems*

III/32. — U.R.S.I. : Report on C.C.I.R. topics regarding Communication Theory.

STUDY GROUP N° IV

*Ground wave propagation*

IV/1. — United Kingdom : Comments on Resolution n° 21. Supplement to C.C.I.R. Atlas of Propagation Curves.

IV/2. — United Kingdom : Ground-wave propagation over mixed paths. The deviation of ground waves at a coast-line.

IV/3. — Federal German Republic : Determination of the electrical characteristics of the surface of the earth.

IV/4. — United Kingdom : Determination of the electrical characteristics of the surface of the earth.

IV/5. — United Kingdom : Tropospheric propagation across mountain ridges.

IV/6. — Netherlands : TV-transmitters (Band V) measurements.

STUDY GROUP N° V

*Tropospheric Propagation*

V/1. — Federal German Republic : Advantages to be obtained from consideration of polarization in the planning of broadcasting services in the VHF (metric) and UHF (decimetric) bands.

V/2. — United Kingdom : Measurement of field strengths for VHF and UHF broadcast services including television.

V/3. — United Kingdom : Proposed revision of Recommendation n° III, Tropospheric wave propagation curves.

V/4. — Federal German Republic : Radiotransmissions utilizing inhomogeneities in the troposphere (commonly termed « scattering »).

V/10. — United Kingdom : Tropospheric propagation across mountain ridges.

V/16. — Netherlands : TV-transmitter (Band V) Measurements.

V/34. — U.R.S.I. : Measurement of field strength in the neighborhood of obstacles.

STUDY GROUP N° VI

*Ionospheric Propagation*

- VI/2. — Horner : Local lightning flash counters.
- VI/3. — Federal German Republic : Ionospheric scatter propagation.
- VI/4. — United Kingdom : Identification of precursors indicative of short-term variations of ionospheric propagation.
- VI/5. — United Kingdom : Production of solar index.
- VI/6. — Federal German Republic : The estimation of the sky-wave field strengths on frequencies above 1500 kc/s.
- VI/7. — United States of America : Radiopropagation at frequencies below 1500 kc/s.
- VI/8. — United States of America : Radio propagation at frequencies below 1500 kc/s.
- VI/9. — United States of America : Centralizing agencies for the rapid exchange of information on propagation.
- VI/10. — United States of America : Basic prediction information for ionospheric propagation.
- VI/11. — United States of America : Choice of basic index for ionospheric propagation.
- VI/12. — United States of America : Exchange of information for the preparation of short-term forecasts and the transmission of ionospheric disturbance warnings.
- VI/13. — United States of America : Identification of precursors indicative of short-term variations of ionospheric propagation conditions.
- VI/14. — United States of America : Revision of atmospheric radio noise data.
- VI/15. — United States of America : Measurement of atmospheric radio noise.
- VI/16. — United States of America : Fading on HF (decametric) and MF (hectometric) signals propagated by the ionosphere.
- VI/17. — United States of America : Study of fading.
- VI/18. — United States of America : Protection of frequencies used by artificial earth satellites or other space vehicles for communication and position observation.
- VI/19. — United States of America : Pulse-transmission tests at oblique incidence.
- VI/20. — United States of America : Back scattering.
- VI/21. — United States of America : Practical uses and reliability of ionospheric propagation data.
- VI/22. — United States of America : Extension of the C.C.I.R. propagation curves below 300 kc/s.
- VI/23. — United States of America : Investigation of circularly polarised emitted waves propagated via the ionosphere.

- VI/24. — United States of America : Long distance propagation of waves of 30 to 300 Mc/s by way of ionization in the E and F regions of the ionosphere.
- VI/25. — United States of America : Regular long distance transmission in the VHF (metric) band by means of scattering from inhomogeneities in the lower ionosphere.
- VI/26. — United States of America : Ionospheric scatter propagation.
- VI/27. — United States of America : Scatter propagation in the upper ionosphere.
- VI/28. — United States of America : Intermittent long-distance radio communication in the VHF band by means of scattering from columns of ionization in the lower ionosphere produced by meteors.
- VI/29. — United States of America : Meteor-burst propagation.
- VI/30. — Federal German Republic : The estimation of sky-wave field strengths on frequencies above 150 kc/s.
- VI/31. — European Broadcasting Union : Ionospheric radio propagation of long and medium waves.
- VI/32. — Federal German Republic : Study of fading.
- VI/33. — United Kingdom : Back-scattering.
- VI/34. — United Kingdom : Choice of a basic index for ionospheric propagation.
- VI/35. — United Kingdom : Pulse transmission tests at oblique incidence.
- VI/36. — United Kingdom : Report on the measurement of atmospheric radio noise.
- VI/37. — United Kingdom : Basic prediction information for ionospheric propagation.
- VI/38. — United Kingdom : Estimation of sky-wave field strengths on frequencies above 1500 kc/s.
- VI/39. — United Kingdom : Ionospheric scatter propagation.
- VI/40. — Australia : Propagation along lower boundary of F layer.
- VI/41. — Australia : Second interim report on medium frequency sky wave measurements.
- VI/67. — U.R.S.I. : U.R.S.I. Commission V on Radio-astronomy.
- VI/68. — U.R.S.I. : U.R.S.I. Commission IV on Radio Noise of Terrestrial Origin.
- VI/69. — U.R.S.I. : Resolution n° 26 — Ionospheric sounding stations after the I.G.Y.

STUDY GROUP N° VII

*Standard frequencies and time signals*

- VI/12. — U.R.S.I. : U.R.S.I. Commission I on Radio Measurements and Standards.



## Interim Meetings of Study Groups

(See *Information Bulletin*, n° 107, p. 26)

### DRAFT AGENDA

#### Study Group n° I (Transmitters)

FROM THURSDAY 7 AUGUST TO THURSDAY 21 AUGUST 1958

1. APPOINTMENT OF RAPORTEURS.
2. GENERAL QUESTIONS    Organisation of work.
  - Administrative Conference : Documents to be submitted.
  - Vocabulary : Work in common to the editing of all texts.
3. SUBJECTS CONCERNING STUDY GROUP I :
  - 3.1. *Quality of receivers* :
    - 3.1.1. Frequency tolerance and stability.
      - Recommendation n° 148.
      - Question n° 1 (I).
      - Study Programme n° 3 (I).
    - 3.1.2. Spurious radiation.
      - Recommendation n° 147.
      - Report n° 17.
      - Question n° 1 (I).
      - Study Programme n° 2 (I).
    - 3.1.3. Measurement and definition of bandwidth.
      - Recommendation n° 88.
      - Recommendation n° 146.
      - Report n° 68 (to be consulted for information).
      - Study Programme n° 40.
    - 3.1.4. Power of transmissions.
      - Recommendation n° 73
      - Recommendation n° 129
      - Recommendation n° 130 } to be studied after agreement of S. G. IX
    - Report n° 33 (to be consulted for information).

3.2. *Radiotelegraphy and radiotelephony.*

- 3.2.1. Frequency shift keying.  
Recommendation n° 150.  
Report n° 40.  
Question n° 20.  
Study Programme n° 41.
- 3.2.2. Four-frequency Diplex systems.  
Recommendation n° 152.  
Study Programme n° 83.
- 3.2.3. Arrangement and designation of channels.  
Classification of systems.  
Recommendation n° 149.  
Recommendation n° 153.  
Report n° 39.  
Question n° 74.
- 3.2.4. Telegraphic distortion.  
Recommendation n° 151.  
Question n° 18.  
Report n° 42 (to be consulted for information)

**Study Group n° III (Fixed Service Systems)**

TUESDAY, 30 JULY TO FRIDAY, 15 AUGUST INCLUSIVE

Opening Session : Tuesday, 30 July at 0930 hours.

- 1. APPOINTMENT OF RAPORTEURS.
- 2. WORKING HOURS.
- 3. FORMATION OF WORKING GROUPS.
- 4. SUBJECTS FOR CONSIDERATION BY S. G. III ALONE :
  - 4.1. Effect of interference and noise on quality of service in the presence of fading.  
Study Programme 44.
  - 4.2. Bandwidths and signal-to-noise ratios in complete systems.  
Study Programme 45.
  - 4.3. Voice frequency telegraphy on radio circuits.  
Question 43.  
Study Programme 46.

- 4.4. Improvement obtainable from the use of directional antennae.  
Question 81.  
Study Programme 85.
  - 4.5. Interference effects of atmospheric noise on radio reception.  
Question 82.  
Study Programme 49.
  - 4.6. Determination of the maximum interference levels tolerable in complete systems.  
Question 84.
  - 4.7. Facsimile transmission of documentary matter over combined radio and metallic circuits.  
Question 94.
  - 4.8. Transmission of half tone pictures over radio circuits.  
Question 95.
  - 4.9. Use of radio circuits in association with 5-unit start-stop telegraph apparatus.  
Question 129.  
Study Programme 50.
  - 4.10. Transmission of meteorological charts over radio circuits by direct frequency modulation of the carrier.  
Question 130.
  - 4.11. Determination of the required interference protection ratios between various classes of emission.  
Question 131.
  - 4.12. Radio relay systems employing ionospheric scatter propagation.  
Question 132.
  - 4.13. Communication theory.  
Question 133.  
Study Programme 86.
  - 4.14. Influence of Doppler shifts on long distance high frequency communication using frequency shift keying.  
Question 139.
5. ITEMS ALSO TO BE CONSIDERED JOINTLY BY STUDY GROUPS II and III.
- 4.2. ; 4.5. ; 4.6. ; 4.11.

6. ITEMS ALSO TO BE CONSIDERED JOINTLY BY STUDY GROUPS I AND III.  
4.2. ; 4.6. ; 4.11. ; 4.14.
7. PROPOSED NEW QUESTIONS BY THE ADMINISTRATIONS OF NEW ZEALAND AND THE NETHERLANDS.
8. INCORPORATION OF ANY RECOMMENDATIONS, ETC. INTO THE RADIO REGULATIONS.
9. ANY OTHER BUSINESS.

**Study Group n° V (Tropospheric Propagation)**

MONDAY, 28TH JULY TO WEDNESDAY, 6TH AUGUST

*Opening session : Monday, 28th July at 0930 hours*

*Draft Agenda*

1. APPOINTMENT OF REPORTERS.
2. WORKING HOURS.
3. MATTERS FOR CONSIDERATION.
  - 3.1. Measurement of field strength.  
Questions n<sup>os</sup> 137 and 138.  
Reports n<sup>os</sup> 48, 49 and 50.  
Recommendations n<sup>os</sup> 60, 61, 63, 65, 112, 113 and 171.
  - 3.2. Advantages from a consideration of polarization.
    - (a) Report n° 85.
    - (b) Question n° 101.
  - 3.3. Wide-band radio systems.  
Question n° 136.  
Report n° 53.
  - 3.4. Mountain ridge effects.  
Study Programme n° 79.  
Report n° 52.
  - 3.5. Tropospheric propagation.  
Study Programme n° 90.  
Recommendation n° 170.

- 3.6. Tropospheric propagation curves for distances well beyond the horizon.
    - (a) Study Programme n° 55.
    - (b) Resolution n° 23.
    - (c) Recommendation n° 111.
  - 3.7. Multipath transmission.  
Study Programme n° 57.  
Report n° 51.
  - 3.8. Tropospheric scattering.  
Study Programme n° 91.
4. POSSIBLE INCLUSION IN THE RADIO REGULATIONS OF C.C.I.R.  
RECOMMENDATIONS CONCERNING STUDY GROUP V.
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## INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS

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### **Nineteenth Meeting of the Bureau**

**Paleis Noordeinde, The Hague, March 3-5, 1958**

The following are the chief points dealt with by the Bureau at the above meeting :

#### I.C.S.U. REVIEW

The publisher of this new venture was named, on the recommendation of the Editorial Advisory Committee nominated by the Executive Board I.C.S.U. at the Brussels meeting in June 1957 (Atwood, Florkin, Huber), as Elsevier. A contract with this publishing house is being prepared, and the first issue of the Review is timed for January 1959.

#### I.C.S.U. AND I.A.F.

The Bureau heard Mr. Andrew G. Haley, President of the International Astronautical Federation, who had urged that some form of cooperation between I.C.S.U. and I.A.F. should be found.

The Bureau nominated a small ad hoc Exploratory Committee, to examine the possibilities of making contact between I.C.S.U. and the I.A.F. within the terms of Article 2(d) of the Statutes, namely :

« to make such contacts and mutual arrangements as are deemed necessary with other International Councils or Unions where common interests exist in the field of the natural sciences covered by the Council ».

The nominations to the Committee are as follows :

I.C.S.U. : H. S. W. MASSEY (U. K.), *Convenor*,  
P. SWINGS (Belgium),  
F. WHIPPLE (U. S. A.);

I.A.F. : TH. VON KARMAN (U. S. A.), *Co-convenor*,  
L. I. SEDOV (U. S. S. R.),  
E. VASSY (France);

to meet in Paris at an early date, and report back to I.C.S.U. and the I.A.F. not later than August 15.

#### CONTAMINATION OF CELESTIAL OBJECTS

This item was introduced by the President, who tabled a recent resolution of the Council of the U. S. National Academy of Sciences, calling for urgent action by I.C.S.U. to « encourage and assist the evaluation of possibilities of such contamination and the development of means for its prevention ».

It was unanimously agreed to set up an ad hoc Committee on Contamination by Extra-terrestrial Exploration (CETEX) to be convened by Professor M. Florkin (Liège), with representation of the following Unions : I.A.U., I.U.G.G., I.U.P.A.C., I.U.P.A.P., I.U.B.S., I.U.P.S. and I.U.B.; with Observers from the I.C.S.U./I.A.F. Exploratory Committee and from C.S.A.G.I. The Committee would present its report by July 1st 1958, for circulation to all National and Scientific Members of I.C.S.U. prior to the meetings in Washington in the fall.

The formation of CETEX is now well under way. It will meet in the Paleis Noordeinde from May 12 to 13.

#### UNESCO

(a) *Subventions for 1959 and 1960.* — These have been proposed, in the Program and Budget of the Natural Sciences Department, as follows :

I.C.S.U. ....	\$ 175.000
F.A.G.S. ....	22.000

with no provision for C.S.A.G.I.

The Secretary General had written a firm letter to Unesco in this matter, urging the following budget :

	1959	1960
I.C.S.U. ....	\$ 250.000	\$ 250.000
F.A.G.S. ....	30.000	30.000
C.S.A.G.I. ....	15.000	10.000

He was thanked for his action, and instructed to keep pressing our case with Unesco.

(b) *Continental Shelf*. — The Secretary General reported verbally on the negative outcome of our efforts to get I.C.S.U. representation on the Unesco delegation to the International Conference on the Law of the Sea, currently sitting at Geneva.

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## INTERNATIONAL GEOPHYSICAL YEAR

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### **Draft IGY Bibliography**

The First Issue of the Draft I.G.Y. Bibliography has been distributed to all I.G.Y. Participating Committees from the C.S.A.G.I. General Secretariat. The first issue contains about one thousand references which have been collected from various sources, including completed I.G.Y. Bibliographic Cards sent to the Secretariat by various Participating Committees. The bibliography is in English and French.

Additions to this draft will be issued from time to time by the C.S.A.G.I. General Secretary. References for inclusion in the bibliography should be sent to the General Secretary and should include the name and initials of author(s), title of article, name, volume number, page number and year of publication of the book or journal containing the article. The language in which the article is written should also be given.

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## U.R.S.I. PUBLICATIONS

### Price List

Copies of publications issued by U.R.S.I. are available at the General Secretariat of the Union at the following prices :

	Belgian Fr	£ sh. d.	\$
<i>Information Bulletin</i> (bi-monthly) :			
Annual subscription .....	250.—	1.16. 0	5.00
<i>Proceedings of General Assemblies</i> :			
4th Gen. Ass., 1931, volume III .....	100.—	0 14 6	2.00
5th Gen. Ass., 1934, volume IV .....	100.—	0.14. 6	2.00
6th Gen. Ass., 1938, volume V .....	150.—	1. 1. 6	3.00
7th Gen. Ass., 1946, volume VI .....	150.—	1. 1. 6	3.00
8th Gen. Ass., 1948, volume VII .....	250.—	1.15. 6	5.00
9th Gen. Ass., 1950, volume VIII :			
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