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**U. R. S. I.**

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## URSI COMMITTEE IN AUSTRALIA

At the request of the Australian Academy of Sciences, the URSI Committee in Australia (President : Prof. W. N. Christiansen) will be transferred from Category 3 to Category 4 on 1 January 1974 in accordance with Art. 8 of the Statutes of URSI.

## INTERNAL REORGANISATION OF URSI

### NOTE BY SECRETARY GENERAL

The Progress Report reproduced below (URSI-M306) was sent to all Member Committees on 13 August 1973. It is expected that the Groups working under the chairmanship of Profs Booker and Migulin will meet before the end of this year and that their reports will be considered by the Board of Officers at its meeting in March 1974.

The Board will also welcome comments from Member Committees and from individuals who are interested in the future scientific activities of URSI.

It would be appreciated if such comments could reach the URSI Secretariat before the end of 1973.

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### 1. — INTRODUCTION.

At the General Assembly of URSI in August 1972, the Board of Officers was authorised to examine the internal structure of the Union and to recommend modifications designed to stimulate its scientific activities (Rec. C. 1), and also to ensure a proper balance between the different aspects of these activities (Rec. C. 4). During the past year, the Board has discussed these questions at two meetings and by correspondence. It has also considered what action could be taken to coordinate the activities of URSI Commissions III, IV and VIII and those of IUGG with particular reference to the branches of geophysics in which both URSI and IUGG have a common interest (Rec. C. 7).

The purpose of this document is to report on the progress made during the past year and to invite comments from the Member Committees of

URSI, and from individuals who are interested in any branch of radio science.

## 2. — GENERAL ASSEMBLY 1972.

For many years URSI has been active in several branches of geophysics : namely investigations of the magnetosphere and of the neutral and ionized components of the upper atmosphere. Since these subjects are also of interest to IUGG, the Union having the principal responsibility for geophysics, the problem of coordinating the activities of the two Unions has given rise to much discussion. In an attempt to resolve this problem, a proposal was made for the creation, under the joint auspices of URSI and IUGG, of a Union on the Earth's Environment; this Union was intended to incorporate radio science, as in URSI, and also all the branches of geodesy and geophysics, as in IUGG.

This proposal was unanimously rejected by the General Assembly in 1972 because it was considered that scientists concerned with radio science and communication science, with which URSI has always been concerned above all, would not enjoy full freedom of action in a Union primarily responsible for geophysics.

The Assembly decided instead that URSI should retain its status as an independent Union and, therefore, its freedom to decide how to divide its activities between, on one hand, the fundamental aspects of radio wave propagation and telecommunications and, on the other, the applications of radio methods in astronomy, geophysics, biology, etc. The Assembly recognised, however, that there was a need to give a fresh stimulus to the scientific activities of the Union and it asked the Board of Officers to examine how this could be achieved by making internal changes in the structure of the Union.

## 3. — SCIENTIFIC ACTIVITIES OF URSI.

In March 1973 the Board made a preliminary examination of the activities of Commissions III, IV and VIII in the light of Rec. C. 7 and Prof. Booker reported on the exchanges of views he had had with the Chairmen of these Commissions. It seemed clear that, for various reasons, it would be difficult to make any decisions concerning the future rôle of these Commissions considered in isolation. In view of this the members of the Board are now giving increasing attention to plans for the reorganisation of the scientific activities of URSI as a whole, and not to those of individual Commissions. In parallel with the discussions between Prof. Booker and the Chair-

men of Commissions III, IV and VIII, Prof. Migulin has been asked to consult the Chairmen of the other five Commissions which are not concerned with upper atmospheric physics.

It is worth noting in passing that, for historical reasons, Commission VIII deals with certain aspects of the magnetosphere (whistlers) and with radio noise (its characteristics and its effects on communication systems). When the activities of Commissions III, IV and VIII are grouped together in the context of this document, the radio noise activities of Commission VIII should be excluded.

In any consideration of the future rôle of URSI, two separate but related questions require consideration :

- (1) what branches of radio science and communication science should, in future, be included in the scientific programme of URSI, and is it desirable to extend URSI's traditional field of radio waves to cover also optical and acoustic waves and their use in telecommunications and remote sensing ?
- (2) what is the optimum distribution of effort and resources in URSI between, on the one hand, the science underlying the generation and propagation of electromagnetic waves and their use in telecommunications and, on the other, the applications of radio science in astronomy, geophysics, biology, etc.?

Neither of these questions has yet been answered in detail. However, Prof. Booker and M. Voge have independently, and at different times, submitted for discussion tentative outline plans for URSI's future field of activity. It is interesting to note that these plans are completely consistent with each other. Taken together (Table I), they appear to provide a useful basis for further discussion on how to answer the two questions posed above.

#### 4. — DISTRIBUTION OF EFFORT.

Opinions tend to be divided over the rôle that URSI itself should play in the exploitation of radio methods in other branches of science and especially in the applications of remote sensing techniques.

Experiments on the propagation of radio waves through an ionized or a non-ionized medium can be used to provide information about :

- (a) the way in which the wave is modified in its passage through the medium (attenuation, scattering, scintillations, etc.), and
- (b) the physics of the medium itself (structure, composition, dynamics, etc.).

The first type of information is primarily the concern of the radioscientist

and it has important applications in communication science. The second type of information is important to the geophysicist who will often employ not only radio but other methods in compiling data about the medium he wishes to study.

The URSI Board tends to feel that URSI should, as far as possible, concentrate on questions relating to the propagation of radiation and that studies of the physics of the medium should be the responsibility of IUGG (for upper and lower atmospheric physics) or of IAU (for astronomical media). This division of responsibilities has been successfully achieved by URSI Commission II and IUGG (IAMAP) in work on the lower atmosphere, and also by URSI Commission V and IAU in radioastronomy. There are difficulties in making a satisfactory division of this kind when dealing with the ionosphere/magnetosphere complex and some thought is being given to the creation of inter-Union Working Groups equally responsible to URSI (Commissions III, IV or VIII) and to IAGA.

The past contributions of radio scientists to research in astronomy and in the physics of the upper and lower atmosphere have been very important. However, it is essential to remember that these had their origin in research on the more fundamental aspects of radio science : generation, propagation and detection of electromagnetic waves, theory and design of antennas, development of new electronic devices, etc. At the last General Assembly, the Finance Committee commented on the fact that expenditure on basic radio science (Commissions I, VI and VII) during the period 1969-71 was only a quarter of the expenditure on activities relating to the ionosphere and magnetosphere (Commissions III, IV and VIII). A similar distribution of funds has emerged for the first allocations that have been made for the period 1973-75 (Table 2).

Warsaw Rec. C. 4 referred to the desirability of ensuring a proper balance between the different aspects of the scientific activities of URSI and of introducing some new activities. The Board has agreed to make financial provision for new topics (Table 2) but finds it difficult to decide what criteria should be used to define a proper balance between the various activities. Opinions are divided between two approaches to this problem which are based on different points of view, outlined below :

1. The vitality of URSI must depend on the emergence of new ideas in basic radio science which may later be applied either in disciplines that are the concern of other Unions (astronomy, geophysics, biology, etc.) or in communication science which has been the concern of URSI since its foundation. It is concluded that insufficient support is being given at

present to basic radio science (11 %) as compared to geophysics (70 %) and that steps should be taken to expand and develop URSI's activities in radio science and communication science.

2. Much of the activity in URSI at present is centred on the physics of the ionosphere and the magnetosphere and the present high level of activity in these fields should be supported and maintained. In dealing with these regions, an overlap between the activities of URSI and IAGA is inevitable but steps should be taken to minimise the resulting problems as far as possible. The comparatively small expenditure incurred by the Commissions concerned with basic radio science is due to the relative lack of interest in these fields, and hence a lower level of activity, and it is not due to the higher expenditure on geophysics.

#### 5. — ACTIVITIES OF COMMISSIONS.

The URSI Working Group on Reorganisation (1970) recommended that consideration be given to the controlled admission of individual scientists as members of URSI, in addition to the Member Committees. Since then, this possibility has been discussed by the URSI Council in 1972 and by the Board in March 1973 (see URSI-M304 and 305 dated 13 May 1973).

The principal reason in favour of the admission of individuals is that it would encourage a greater sense of personal participation, in the affairs of the Union, on the part of individuals and especially of the younger scientists. They would have the opportunity of participating in the activities of one or two Commissions or Working Groups concerned with topics in which they had a personal interest. Such a stimulus to the scientific activities of URSI would be in accord with Warsaw Rec. C. 1.

At present an URSI Commission covers a very wide range of subjects and it would be difficult or impossible for an individual to take an active interest in all of these. It is for this reason that the Board is considering the creation of a larger number of Commissions. The Statutes permit the establishment of small Working Groups, with selected membership, within Commissions and these already allow concentrated attention to be given to particular tasks or problems in several Commissions.

No proposals have yet been made as to the number of Commissions that should be created in 1975. Table 1 provides a basis for further discussion of this question but it will be necessary, first of all, to reach a decision on which of the different branches of radio science are likely to be of most importance during the period 1975-1978.

It has often been asserted that the present Commission structure is too rigid and that the objectives of the Commissions themselves are often too diffuse and ill-defined. These criticisms would no longer be valid if there were a larger number of Commissions, each having a series of fairly well-defined objectives, and subject to review at every General Assembly. The Council has the power to create and abolish Commissions and to decide on their terms of reference but has not made use of it since 1966 in view of the discussions on reorganisation which were initiated in 1969.

In conclusion, it is worth recalling that the most constructive initial approach to the internal reorganisation of URSI appears to be a careful study of the various branches of radio science and the selection of those that seem to be most appropriate to the future activities of the Union. The choice of subjects should not be restricted or influenced by the fields covered by the present Commissions.

TABLE I. *Suggested subdivisions of radio science in URSI*

A. <i>Scientific aspects of radio techniques</i>	
A1. Measurements and standards	1 Electromagnetic theory and measurements 1A Theory 1B Measurement methods and standards 1C Telecommunications noise environment
A2. Waves and signals	3 Radiation and collection of radio energy 4 Communication systems 5 Information theory 6 Information processing 6A Electronic 6B Optical 7 Electromagnetic wave propagation 7A Radio and optical waves in non-ionized media 7B Waves in plasmas 7C Waves guided by man-made structures 9 Applications of telecommunication science 10A Acoustic telecommunications
A3 Radioelectronics	2 Electromagnetic devices
B. <i>Influence of natural media on radio waves</i>	
B1 Radioastronomy	8A Radioastronomy
B2 Radiogeophysics and non-ionized media	8C Radiometeorology 8D Laser meteorology 8E Remote sensing of planetary surfaces 10B Remote sensing of planetary subsurfaces
B3 Radiogeophysics and ionized media	8B Radioaeronomy
B4 Radiobiology	10C Remote sensing in biology.

*Notes on Table 1.* — The subdivisions of radio science suggested by M. Voge in 1972 and by Prof. Booker in 1973 are listed in the left-hand and right-hand columns respectively.



The following remarks give further information about the topics in Prof. Booker's list.

- Item 2. Including electron, ion, solid-state and optical devices.
- 4. Including network theory, optimization of networks, switching theory, theory of queues, and theory of data acquisition systems.
- 5. Includes detection theory at radio and optical frequencies.
- 8. Items 8A-8E are grouped together under the heading "Remote Sensing".
- 8B. Includes the geophysical aspects of ionospheric and magnetospheric studies.
- 8C. Including the generation of atmospherics.
- 9. Includes consulting services to other international organisations such as ITU and CCIR.
- 10. Items 10A, B and C are grouped together under the heading "New Topics".

TABLE 2. *Allocations of funds for specific scientific activities.*

	1969-71	1973-75
	%	%
Ionized media .....	44	48
Non ionized media .....	25	23
	-----	-----
Total : Geophysics .....	69	71
Radioastronomy .....	20	6
Basic studies .....	11	12
New topics .....	—	11
	-----	-----
	100	100 (representing about 75 % of the funds available)

## CO-SPONSORSHIP OF SCIENTIFIC MEETINGS BY URSI

*Note from Secretary General.* — In view of several recent enquiries, the following has been reprinted from *URSI Inf. Bull.*, No. 175 (1970).

Scientific meetings of many kinds, such as symposia, colloquia and smaller discussion groups, have become a familiar feature of the activities of research scientists who wish to exchange views with their colleagues. These meetings can be divided into two main types : those which are planned by international scientific organisations such as ICSU and its member Unions and Committees, and those where the initiative is taken by a national body such as an Academy of Sciences, a scientific society, or a research institute.

In general the internationally organised meetings are planned by a committee which includes a cross-section of the members of the international body. Moreover both the speakers and the participants at such meetings come from many countries.

In the past, a meeting organised by a national body was primarily intended for participants from the country in which the meeting was held. However, over the last two decades, international travel by air has made it possible for scientists from one country to attend meetings in another country, or even in another continent, without an unduly great expenditure of time. In consequence, the national bodies which organise these meetings often invite speakers from other countries and, in addition, they frequently encourage the attendance of participants from many countries. As a result of these practices, the meetings organised by national bodies often tend to become, in effect, international in the sense that many of the speakers and the participants come from countries other than the host country.

When a national body organises an important scientific meeting and when the meeting later develops an international character, as explained above, it frequently happens that the national body then invites one or more international bodies to act as co-sponsors of the meeting.

Reference has been made above only to the two main types of meeting : those organised respectively by a recognised international body, such as a Union of ICSU, and by a national body, such as a research institute or scientific society. A third type of meeting must also be mentioned. It sometimes happens that a small group of scientists from several countries agree among themselves to form an *ad hoc* committee. This committee then organises a meeting on a topic which is of interest either to scientists in many countries or to those in a particular region.

In recent years, the number of requests for co-sponsorship of meetings, received by the members of ICSU from national bodies and from *ad hoc* international committees, has grown considerably and these have caused some embarrassment to URSI and to some other Unions.

The principal cause of this embarrassment is that, by the time the Union is invited to be a co-sponsor, the choice of location for the meeting has already been made and the planning of the scientific programme has usually reached an advanced stage. In these circumstances, the Union can play no active rôle in the organisation of the meeting; in consequence, its co-sponsorship, if accepted, is purely nominal since the principal decisions have already been taken.

At the XII General Assembly of ICSU, the Unions were invited to consider the adoption of a common practice in deciding whether or not

to agree to be co-sponsors of scientific meetings (*URSI Inf. Bull.*, No. 169, p. 10). The ICSU invitation was discussed at the XVI General Assembly of URSI and Resolution 11 authorised the Board of Officers to adopt rules regulating the sponsorship of scientific meetings by URSI (*URSI Inf. Bull.*, No. 172, p. 53 and *Proceedings of URSI Assemblies*, Vol. XV, p. 191). The criteria listed in the URSI Resolution were based on those suggested by ICSU.

The rules and recommendations reproduced below were approved by the URSI Board of Officers in February 1970. They will be used as a general guide during 1970 and will take full effect for meetings planned for 1971 onwards.

*Rules and Recommendations relating to the Co-Sponsorship  
of Scientific Meetings by URSI*

(1) For each meeting, an international Programme Committee shall be established comprising representatives of the country or the organisation that issues the invitation, and also of URSI and other interested organisations.

(2) The Programme Committee will be responsible for planning the scientific programme, for selecting the speakers and for ensuring that the quality of the scientific programme is worthy of sponsorship by a scientific Union.

(3) The Committee must avoid the choice of topics that have recently been discussed at other international meetings or that will be discussed at such meetings in the near future.

(4) Adequate financial support for the main expenses of the meeting must be available from national resources. In cases where a supplementary grant is made by URSI, the amount will be decided by the Board of Officers.

(5) In view of the undesirably large numbers of isolated and inaccessible volumes containing papers presented at symposia etc., it is recommended that the papers be published (on the initiative of the individual authors) in existing scientific periodicals or (following the completion of arrangements between the organising committee and a publisher) in a special issue of a periodical.

(6) It is considered desirable to stimulate interest in science in developing countries by holding meetings in them, provided that this is practicable and that attention is given to the problems of overall cost and foreign exchange.

## PATRONAGE DE CONFÉRENCES SCIENTIFIQUES PAR L'URSI

Les conférences scientifiques de tous genres — symposia, colloques, groupes de travail, etc. — font maintenant partie des activités des chercheurs désireux de procéder à des échanges de vue avec leurs collègues. Ces conférences peuvent se classer en deux catégories principales : d'une part, les réunions organisées par des organisations scientifiques internationales, telles que le Conseil International des Unions Scientifiques et ses Comités et Unions membres et, de l'autre, celles organisées par des organismes nationaux, tels que les Académies des Sciences, les sociétés scientifiques et les instituts de recherche.

De manière générale, l'organisation des conférences de la première catégorie est confiée à un comité composé de représentants de l'organisme international, cependant que les conférenciers et participants viennent des pays membres.

Dans le passé, les conférences organisées par les organismes nationaux étaient avant tout destinées à des participants du pays même. Or, depuis une vingtaine d'années, les transports aériens internationaux permettent aux scientifiques de se déplacer sans trop perdre de temps pour assister à des réunions ayant lieu dans d'autres pays, et même dans d'autres continents. En conséquence, les organismes nationaux non seulement sollicitent la contribution de conférenciers étrangers, mais aussi encouragent la participation de chercheurs venant de l'étranger. Il en résulte que ces réunions tendent souvent à prendre un caractère international. Dans pareils cas, il arrive fréquemment que l'organisme national invite une ou plusieurs organisations internationales à accorder leur patronage à la réunion.

Il a été question jusqu'ici de deux principales catégories de conférences : celles organisées par des organismes internationaux, telles que les Unions membres du CIUS, et celles organisées par des organismes nationaux, telles que les instituts de recherche ou les sociétés scientifiques. A cela s'ajoute une troisième catégorie : celle des réunions qui sont convoquées par de petits groupes de scientifiques de plusieurs pays, lesquels constituent des comités *ad hoc* pour l'étude de sujets présentant de l'intérêt soit à l'échelle régionale, soit à l'échelle internationale.

Au cours de ces dernières années, les membres du CIUS ont reçu d'organismes nationaux et de comités *ad hoc* internationaux un nombre croissant de demandes de patronage, ce qui n'a pas manqué de créer un certain embarras. La cause principale en réside dans le fait qu'au moment

où le patronage d'une Union est sollicité, le lieu de la conférence est déjà choisi et les grandes lignes du programme scientifique sont déjà établies. Dans ces circonstances, l'Union ne peut plus jouer qu'un rôle passif dans l'organisation de la conférence et son patronage devient purement nominal, toutes les décisions importantes ayant déjà été prises.

Au cours de sa XII<sup>e</sup> Assemblée générale, le CIUS a invité les Unions à envisager l'adoption de règles de conduite communes dont elles s'inspireraient pour accorder leur patronage aux réunions scientifiques (*Bull. d'Inf. de l'URSI*, n° 169, p. 10). Cette suggestion a été examinée par la XVI<sup>e</sup> Assemblée générale de l'URSI dont la Résolution 11 autorise le Bureau à adopter des règles régissant le patronage de conférences scientifiques par l'Union (*Bull. d'Inf. de l'URSI*, n° 172, p. 11 et *Comptes Rendus des Assemblées générales de l'URSI*, vol. XV, p. 151).

Ces règles, qui ont été approuvées par le Bureau en février 1970, s'inspirent des normes suggérées par le CIUS et sont reproduites ci-dessous. Elles seront mises en application à partir de 1971, mais serviront déjà de guide pour les réunions qui doivent se tenir en 1970.

*Règles et recommandations relatives au patronage de conférences scientifiques par l'URSI*

1) Un Comité international du programme, comprenant des représentants du pays ou de l'organisme invitant, de l'URSI et des autres organisations intéressées, sera constitué pour chaque conférence.

2) Le Comité du programme sera chargé du choix des conférenciers et de la mise au point du programme scientifique; il veillera à assurer à celui-ci un niveau digne de l'Union.

3) Le Comité du programme évitera de porter à l'ordre du jour des sujets ayant déjà été discutés au cours de réunions récentes ou devant l'être dans un proche avenir.

4) Le coût général de la conférence sera couvert par des fonds en provenance de sources nationales. Dans le cas où des subsides supplémentaires seraient accordés par l'URSI, le montant en sera déterminé par le Bureau.

5) Etant donné le nombre important d'ouvrages isolés et inaccessibles renfermant les communications présentées au cours de symposia, etc., il est recommandé de faire publier celles-ci dans des périodiques scientifiques courants (à l'initiative des auteurs) ou bien sous forme de numéro spécial d'un périodique (suite à des arrangements entre le comité organisateur et l'éditeur).

6) Il est considéré souhaitable de stimuler l'intérêt scientifique dans les pays en voie de développement en y organisant des conférences; il sera

toutefois nécessaire d'examiner au préalable les possibilités générales, le coût global de la conférence ainsi que le problème éventuel de l'échange des devises.

## COMMISSION VII CIRCULAR LETTER FROM THE CHAIRMAN

*To Official Members of Commission VII.*

Dear Colleague,

Professor Smolinski and I have been giving much thought recently to the kind of activity that might be appropriate for Commission VII between General Assemblies.

The question is complicated by the wider issue of the possible internal reorganisation of URSI, which could have repercussions on the field of activity of Commission VII.

It would help me greatly to have a clearer idea than I have at present of the views of the Official Members of Commission VII on the following questions, and I should be extremely grateful if you would be kind enough to let me have your views.

1. The scope of Commission VII, Radio Electronics, has recently been described by Professor Migulin as follows : —  
“*Commission VII* up to now has no distinct programme for its activity and evidently it is expedient to concentrate its attention on new physical phenomena, which were used or possibly will be used for radio systems (for instance : acousto-electrical processes, interaction of ultrasound and optical emission, superconductivity, Josephson effects and so on)”. Do you believe that any change in the scope of Commission VII is desirable ?
2. Should Commission VII organise regular conferences between General Assemblies as Commission VI has done so successfully for many years ?
3. If you believe that such Conferences would be useful, what topic within the scope of Commission VII would you regard as particularly appropriate for the first Conference ?

9 August 1973

Yours sincerely,

A. L. Cullen

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Torrington Place,  
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*Note from Secretary General.* — Readers of the *URSI Bulletin* who wish to express their views on URSI's future activities in radio electronics and related fields are invited to write direct to Prof. A. L. Cullen.

## THE DISCOVERY OF THE INCOHERENT SCATTER PROCESS

F. DU CASTEL  
CNET  
Issy-les-Moulineaux, France

Haubert (1972) has recently drawn attention to a paper by Fabry (1928) which contains what appears to be one of the first references to the process of incoherent scattering. The concluding paragraphs of this paper are reproduced below.

In the history of science, it frequently happens that the intuitions of pioneers anticipate, by several decades, the practical possibility of verifying the original ideas. This does not in any way detract from the value of the subsequent precise calculations or the definitive experiments carried out many years after the ideas were first launched : for example, the theoretical work of Gordon (1958) and the experiments of Bowles (1958) in the field of incoherent scatter.

It is only right that due recognition should be given to the early contribution made by Fabry to what is now an important branch of ionospheric research. In the interests of the history of science, it would be interesting to know whether any other now forgotten papers comparable to Fabry's were published in other countries.

### REFERENCES

- BOWLES, K. — *Phys. Rev. Letters*, **1**, 454 (1958).  
FABRY C. — *C. R. Acad. Sci. Paris*, **187** (19), 777 (1928).  
GORDON W. — *Proc. I. R. E.*, **46**, 1824 (1958).  
HAUBERT A. — *L'ionosphère*, Presses Univ. France, (1972).

*Remarques sur la diffusion de la lumière et des ondes hertziennes par  
les électrons libres* (Note de M. Ch. Fabry)

...

Pour expliquer les curieux effets que l'on constate dans la propagation des ondes, on avait surtout considéré jusqu'ici des phénomènes de *réfraction*. Tout récemment, M. Jouaust <sup>(1)</sup> a attiré l'attention sur l'importance que peut avoir la *diffusion* par les électrons. C'est en réfléchissant aux consé-

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(<sup>1</sup>) *C. R. Acad. Sci. Paris*, **187**, 1928, p. 208.

quences de cette intéressante idée que je suis arrivé aux conclusions que je viens d'exposer. Le résultat le plus important me paraît être celui-ci : en tenant compte de la concordance de phase entre les électrons vibrant dans un assez grand volume, il peut y avoir soit diffusion, soit réflexion plus ou moins régulière, sans que le nombre des électrons soit extrêmement élevé.

Mes calculs ne constituent d'ailleurs qu'une première et assez grossière approximation. J'ai implicitement supposé que l'énergie enlevée à l'onde incidente reste assez faible pour que l'on puisse considérer tous les électrons comme soumis à la même perturbation. J'ai négligé l'effet des chocs entre électrons et molécules qui, comme l'a montré Larmor, produit une absorption d'énergie. Enfin, si les électrons participent au mouvement d'agitation moléculaire, il doit y avoir un effet Doppler qui modifiera les lois de la diffusion et pourra transformer un rayonnement monochromatique en un élément de spectre continu.

### **INTER-UNION COMMISSION ON FREQUENCY ALLOCATIONS FOR RADIO ASTRONOMY AND SPACE SCIENCE (IUCAF)**

A meeting of IUCAF, with Prof. F. G. Smith in the Chair, was held in Konstanz (F. R. Germany) on 26 May 1973. All the members and the advisers from CCIR and IFRB were present.

Numerous matters relating to present and possible future frequency allocations for radioastronomy and space research were discussed as well as problems arising from interference experienced on the frequencies already in use.

National IUCAF Correspondents have been designated in 27 countries so as to improve contacts between IUCAF and the scientists engaged in research in radioastronomy or in the use of rockets and satellites for research.

Further information on the activities of the Commission and the names of National Correspondents can be obtained from the Secretary :

Dr. C. M. Minnis,  
URSI Secretariat,  
Place Emile Danco 7,  
B-1180 Brussels, Belgium.



## XVI COSPAR MEETING, 1973

1. — The XVI COSPAR Meeting was held in Konstanz, F. R. of Germany, at the invitation of the Deutsche Forschungsgemeinschaft. At the Plenary Meetings and in Meetings of the Executive Council, URSI was represented by M. J. Voge (Vice-President).

2. — Two of the three specialised symposia held just before the COSPAR Meeting were organised in collaboration with URSI and other ICSU bodies :

2.1. — *Approaches to Earth Survey Problems through the Use of Space Techniques*. URSI was represented by M. P. Misme (Chairman, URSI Commission II) and by Drs R. K. Moore and J. W. Rouse, Jr. who presented papers on the scientific basis for remote sensing using electromagnetic radiation. Selected papers will be published in a volume (Ed. Prof. P. Bock) which will include also papers presented at an Open Meeting of Working Group 6 (Applications of Space Research to Meteorology and Earth Surveys).

2.2. — *Methods of Measurement of Lower Ionosphere Structure, and Results*. Prof. K. Rawer and Dr. L. Thomas represented URSI in the planning and conduct of this Symposium. Prof. Rawer will edit a volume containing selected papers presented.

2.3. — It is expected that both the volumes referred to above will appear in March 1974.

3. — The next COSPAR Meeting will be held in June 1974 in São Paulo, Brazil. It will be preceded by a COSPAR Seminar on the use of remote sensing for making earth surveys in developing countries.

At the same time there will be a Symposium on Solar-Terrestrial Physics which will be organised jointly by COSPAR and the interested Unions.

4. — The Plenary Meeting accepted the invitation of the Israeli Academy of Sciences and Humanities for the COSPAR Meeting in 1975. It is possible that the 1976 Meeting may be held in Canada, India or the USA, and the 1977 Meeting in Bulgaria.

5. — The Plenary Meeting adopted Resolutions and Recommendations of which the following are of interest to URSI.

### DECISION 1.

#### COSPAR,

noting an increasing tendency for agencies controlling international

observing programmes to delay making data available to investigators for several years after the end of the observing period, and

*appreciating* that those who acquire data are entitled to have priority in the exploitation of the data, nevertheless

*strongly urges* that data acquired in international programmes be released to the scientific community at the earliest possible opportunity.

DECISION 4.

COSPAR,

*noting* the draft proposal for a new structure for IAGA,

*expresses concern* about the possible creation of new bodies with overlapping functions which would further disperse the limited resources of its participants, and

*considering* the concern expressed by its various Working Groups,

*urges* that more careful consideration be given to this proposal in consultation with other affected bodies.

DECISION 5.

COSPAR,

*noting* the value of written reports of the activities and achievements of the Solar Activity Forecasting Centres,

*resolves* to publish such reports in the *COSPAR Bulletin*, and

*urges* those Centres to send representatives to the COSPAR Flare Forecasting sessions in order to discuss these reports.

DECISION 6.

COSPAR,

after consultation within its Working Groups,

*endorses* the IUWDS resolution on Quick-Look Data (*see URSI Information Bulletin No. 184, p. 41*).

DECISION 7.

COSPAR,

*noting* the complexity of the ionosphere below 90 km, and the lack of data for incorporation in the International Reference Ionosphere (IRI),

*recommends* an intensive effort over the next year to measure electron concentration, ion composition, and neutral and electron temperatures for the conditions specified for the IRI, using a suitable combination of rocket-

borne techniques (mass-spectrometers, Langmuir probes, differential absorption and Faraday rotation) to permit cross-checking of the results, and further

*recommends* that these results be made available promptly for the IRI.

## SYMPOSIUM ON SOLAR-TERRESTRIAL PHYSICS

São Paulo, 1974

The above Symposium is being organised jointly by the interested Unions and COSPAR and will be held from 17-22 June in São Paulo just before the COSPAR Meeting. The provisional timetable for the Symposium is as follows :

June	Morning	Afternoon
17	Atmospheric Physics — Review I Interplanetary Medium — Contributions I	Atmospheric Physics — Contributions I Interplanetary Medium - Reviews I
18	Atmospheric Physics — Reviews II Interplanetary Medium — Contributions II	Atmospheric Physics — Contributions II Interplanetary Medium — Reviews II
19	Atmospheric Physics — Reviews III Magnetosphere — Contributions I	Atmospheric Physics — Contributions III Magnetosphere — Reviews I
20	CINOF Magnetosphere — Contributions II	Solar Topics I Magnetosphere — Reviews II
21	Flare Build-up Study Quiet Magnetosphere — contributions	Solar Topics II Magnetosphere — Reviews III
22	Overflow contributions, etc. Business Sessions of URSI Working Groups.	

The Chairman of the Programme Committee is Prof. S. A. Bowhill and the Secretary is :

Dr. E. R. Dyer, Jr.  
National Academy of Sciences,  
2101 Constitution Avenue,  
Washington D.C. 20418, USA.

## A. S. POPOV GOLD MEDAL CONTEST

The Academy of Sciences of the USSR has announced the next contest for the A. S. Popov Gold Medal for distinguished scientific work and inventions in the field of radio-engineering and electronics. The Medal will be awarded to a Soviet or a foreign scientist for one or more papers describing work of great scientific value, or distinguished discoveries or inventions.

The papers can be submitted by research or educational institutions, design offices, scientific societies, and by Academicians, Corresponding Members or Foreign Members of the Academy of Sciences of the USSR.

The following documents must be submitted in support of applications for the award :

- (a) 3 copies of the papers mentioned above;
- (b) a testimonial assessing the scientific value of the work and its importance for the progress of science and engineering;
- (c) a brief biographical note of the candidate and a list of his main scientific papers and inventions.

These documents must be marked "A. S. Popov Gold Medal Contest" and be addressed to :

Academy of Sciences of the USSR,  
Division of General Physics and Astronomy,  
Leninskij Prospekt 14,  
Moscow B-71, USSR.

so as to arrive *not later than 7 February 1974*.