

SCAR

SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

BULLETIN

ARGENTINA AUSTRALIA BELGIUM
CHILE FRANCE JAPAN NEW ZEALAND
NORWAY SOUTH AFRICA UNITED KINGDOM
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SCAR BULLETIN

No. 19, January 1965

EIGHTH MEETING OF SCAR, PARIS

24 TO 28 AUGUST 1964

Present:

President: L. M. Gould.

Delegates: Argentina, R. N. M. Panzarini; Australia, B. P. Lambert; Belgium, W. de Breuck; Chile, J. Araos; France, G. R. Laclavère; Japan, T. Nagata; New Zealand, J. H. Miller; Norway, T. Gjelsvik; South Africa, S. M. Naudé; United Kingdom, G. de Q. Robin (Secretary); USA, L. M. Gould; USSR, M. M. Somov; IGU, V. Schytt; IUBS, M. W. Holdgate; IUGG, G. R. Laclavère; IUGS, T. Gjelsvik; WMO, K. Langlo.

Observers: ICSU, G. R. Laclavère; COSPAR, H. W. Wells, M. J. Gazin; SCIQSY, T. Nagata, C. M. Minnis; SCIBP, M. W. Holdgate.

Advisers: Australia, P. G. Law, H. R. Phillpot; Netherlands/Belgium, W. Bleeker; Chile, O. Pinochet; France, J. Alt, D. Barbier, P. Bellair, R. Bost, J. Commiot, R. Delepine, H. Guichard, A. Lebeau, C. Lorius, A. Morlet, Mlle G. Pillet, J. Prévost, P. Rolland, G. Rouillon, R. Schlich, G. Weill; Japan, K. Kazama, T. Torii; Norway, S. Helle, T. Vinje; South Africa, J. J. Taljaard, A. M. van Wijk, E. M. van Zinderen Bakker, W. C. Watson; United Kingdom, O. G. Edholm, Sir Vivian Fuchs, M. W. Holdgate, H. H. Lamb, J. M. Stagg, W. D. C. Wiggins; USA, A. F. Blanchard, H. Dater, H. S. Francis, J. R. Reedy, M. J. Rubin, W. J. L. Sladen, R. B. Southard, W. L. Tressler, H. W. Wells; USSR, A. P. Andriyashev, G. M. Tauber, Y. S. Korotkevich.

President's opening address

After the Meeting was opened, the delegates were welcomed and thanks were expressed to the Académie des Sciences de Paris, the Comité National Français des Recherches Antarctiques, and the Director of the Institut Géographique National for the invitation to hold the VIIIth Meeting of SCAR in Paris and for the arrangements that had been made.

Mr Laclavère conveyed to the meeting Professor Roy's regret that he was himself unable to be present, and welcomed the delegates on behalf of the Académie des Sciences.

Constitution

It was noted that IUPS had appointed Dr L. Irving as its delegate to SCAR.

Functions of SCAR

(a) It was reported that, in accordance with the recommendations of the VIIth meeting of SCAR, seven National Committees had designated Glaciological Centres and Information Exchange Centres, and that Chile was considering designating such centres.

(b) It was reported that, in accordance with a request made at the last meeting, the Secretary, in April 1964, had submitted to National Committees a paper summarizing the recommendations of SCAR on data exchange in the different

disciplines. It was further reported that several National Committees had passed copies of this document to their governments.

Comments on the Meteorological and Biological sections of this document received from the Soviet National Committee would be considered by the relevant Working Groups of SCAR at this meeting.

(c) SCAR agreed that it would be desirable to take some action to mark the completion of ten years of international co-operation in the Antarctic, and the *ad hoc* Working Group of Delegates and Advisers was requested to consider this matter further.

(d) The meeting noted the valuable increase in the level of scientific co-operation during 1964. In addition to the continuing US/Soviet exchanges, US/New Zealand, and US/Argentine collaboration, the following developments during 1964 were particularly noted:

A UK-Soviet exchange

A joint French-Soviet glaciological traverse

Participation of the Netherlands in the Belgian Antarctic Expedition, and the formation of a Netherlands National Committee.

Closer US-Chilean work

The formation of the Instituto Antártico Chileno was noted with particular pleasure and the good wishes of SCAR were extended to the Chilean Delegate.

The continuing US, Argentine and French support for IAAC and the addition of Soviet and Japanese meteorologists to the staff of the Centre were noted with pleasure.

SCAR agreed that such actions should be encouraged wherever they will prove useful scientifically.

SCAR symposia

Past symposia

(i) It was reported that the Proceedings of the SCAR Symposium on Antarctic Biology, Paris, September 1962, had been published in May 1964, under the title *Biologie Antarctique*, by Hermann et Cie, 115 Bd Saint Germain, Paris 7.

SCAR recorded its congratulations and gratitude to the editors: Dr R. Carrick, Dr M. W. Holdgate and Dr J. Prévost; to the French National Committee, to Expéditions Polaires Françaises, Académie des Sciences, and to the publishers for their various roles in the production of this publication.

(ii) It was noted that satisfactory progress was being made with the preparation for publication of the papers presented at the SCAR Symposium on Antarctic Geology, Cape Town, September 1963. All papers had been edited and sent to the publishers, and the first page proofs were appearing. The format requested by the Geological Working Group was being followed as closely as practicable. Dr R. J. Adie, the scientific editor, was finding the North Holland Publishing Company co-operative and efficient.

Future symposia

(i) It was noted that a Symposium on Antarctic Meteorology in 1965 would be considered by the Working Group on Meteorology at this meeting. Interested international organizations, namely WMO and the Commission on Polar Meteorology of IAMAP, would be represented at the Working Group meeting.

(ii) It was reported that SCOR and IAPO have agreed to co-sponsor a Symposium on Antarctic Oceanography in 1966. An invitation to IUBS to be another joint sponsor has been considered at the General Assembly of the Union in July, but formal confirmation of support had not yet been received. It was noted that both SCOR and IAPO were in agreement with the SCAR proposal that the Symposium on Antarctic Oceanography be held independently of the Second International Oceanographic Congress, Leningrad, 1966.

(iii) It was reported that the International Commission of Snow and Ice had been informed of the proposed Symposium on Antarctic Glaciology in 1967.

(iv) Professor Nagata reminded SCAR that at the last Pacific Science Congress, held in Honolulu in 1962, a valuable Antarctic Symposium had been held.

A similar Antarctic Symposium had been proposed in connection with the Eleventh Pacific Sciences Congress to be held in Tokyo in 1966, and the views of SCAR would be appreciated.

Liaison with other international organizations

IQSY Committee. (i) It was reported that Professor T. Nagata had represented SCAR at the meeting of the IQSY Committee, Florence, 7 May 1964.

(ii) Dr C. M. Minnis, Secretary of the SCIQSY, conveyed to SCAR the greetings of the President of the IQSY Committee, who had recalled that both the IGY and IQSY had stemmed from the concept of Polar Years in 1882 and 1932.

Dr Minnis reported that the preparation of synoptic auroral maps had been discussed at the IQSY regional meetings in Buenos Aires, August 1964, but that no Southern Hemisphere country was in a position to undertake this task. He informed SCAR that J. Paton, the IQSY Reporter for Aurora, had now offered to prepare the synoptic auroral maps but would require the assistance and co-operation of all observing countries.

It was reported that, at the May meeting of the IQSY Committee, it had been decided to produce a series of 10–15 volumes of *Annals of the IQSY*, and that it had been suggested that a section might be devoted to the Antarctic. Dr Minnis stated that he would appreciate the views of SCAR.

SCIBP. (i) It was reported that Dr M. W. Holdgate represented SCAR at the First General Meeting on the International Biological Programme, Paris, 23–25 July 1964, and was supported by Dr W. S. Benninghoff.

(ii) Dr Holdgate was thanked for the preparation and submission of a statement to the IBP Meeting on behalf of SCAR, and for his preparation of a report to SCAR on the IBP meeting.

COSPAR. (i) It was reported that Dr D. F. Martyn represented SCAR at the Seventh Plenary Meeting of COSPAR and the Fifth International Space Science Symposium, Florence, 8–20 May 1964, and was supported by A. H. Shapley.

(ii) SCAR recorded its thanks to Mr Shapley for preparing and submitting a statement to COSPAR on behalf of SCAR and for preparing a report to SCAR on the COSPAR meeting.

(iii) It was suggested that it might be beneficial for SCAR to consider

nominating a permanent representative on COSPAR, or at least nominating an individual to liaise with COSPAR.

SCOR. (i) It was reported that Dr G. E. R. Deacon and G. E. Hemmen had represented SCAR at the meeting of the SCOR Executive, Paris, 8-9 June 1964.

(ii) SCAR recorded its thanks to its representatives for the preparation of a report to SCAR on the SCOR Executive Meeting.

(iii) The following actions were agreed:

— To record SCAR's gratitude to SCOR for nominating a SCOR member to liaise with SCAR on the proposed Programme in Oceanography.

— To refer the SCOR comments on the SCAR Programme in Oceanography to the Working Group on Oceanography.

— To welcome the proposal for a permanent SCOR representative on SCAR.

WMO. SCAR expressed its thanks to Dr Langlo for submitting the Sixth Progress Report on WMO's Activities of Special Interest to SCAR, to which was annexed WMO Congress Resolution 29 (Cg-IV) and Executive Committee Resolution 23 (EC-XVI).

This Report would be considered in detail by the Meteorological Working Group, but Dr Langlo drew to the attention of SCAR the difficulties in the formation of a Standing Committee on Antarctic Meteorology, and the decision of the Executive Committee to establish a Working Group on Antarctic Meteorology until the agreement of all member countries of the Antarctic Treaty had been achieved.

Dr Langlo also drew attention to the establishment of a new Development Fund, from which financial support for some activities in relation to the World Weather Watch might be forthcoming in 1965.

IUGG. (i) It was reported that the Resolutions of the IUGG General Assembly had not yet been fully published. A paper prepared by the SCAR Secretariat summarizing the situation with regard to International Programmes in the Atmospheric Sciences and the International Hydrological Decade was considered.

(ii) SCAR received an invitation from the Secretary General of the Upper Mantle Committee of IUGG for SCAR to nominate a representative on that Committee.

IUBS. It was reported that the reports of the General Assembly of IUBS, Prague, 17-22 July 1964, had not yet been received, but SCAR noted with pleasure the formation of a Section for Biological Oceanography of IUBS with which the SCAR Working Groups on Biology and Oceanography should co-operate.

Finance

(a) The statement of SCAR Income and Expenditure in 1963 was received. It was noted that the SCAR debit balance was now just under \$3000.

(b) SCAR expressed its thanks to the Treasurer of ICSU for his efforts in obtaining for SCAR the allocation of \$2800 from the 1964 UNESCO subvention to ICSU and requested him to convey SCAR's gratitude to UNESCO.

IAAC and the ICSU Special Fund

(a) It was reported that the Trustees of the ICSU Special Fund for the IAAC had approved a grant of \$4000 to enable a Japanese meteorologist, Mr Yoshida, to join the IAAC by paying for his fares and overseas subsistence allowance. The Japan Meteorological Agency had made his services available and was continuing to pay his normal salary.

(b) It was reported that so far only one grant of \$1000 had been received. ICSU had proposed that the loan of \$10 000 be repaid over a period of six years.

SCAR Working Groups

(a) *Officers*

Biology. It was noted that Dr R. Carrick had resigned as Secretary of the Working Group on Biology and that the Working Group would be considering his replacement at this meeting. SCAR recorded its appreciation of Dr Carrick's excellent work, especially in connection with the conservation of nature in the Antarctic, and with the organization of the successful Symposium on Antarctic Biology in 1962. SCAR also expressed its thanks to Dr Holdgate for standing in and organizing the Working Group meeting this year.

Glaciology. It was reported that C. Lorius will be wintering in the Antarctic next year and that a replacement as Secretary of the Working Group on Glaciology was needed.

Solid Earth Geophysics. It was noted that, over a year ago, Dr E. I. Robertson had expressed his wish to resign as Secretary of the Group and that a replacement had not yet been found.

Logistics. A cable was received from the Secretary of the Working Group on Logistics, G. W. Markham, informing SCAR that the Group had nothing to report, recommending that SCAR Logistics symposia be held at five-year intervals, and tendering his resignation as Secretary.

SCAR requests the Logistics Working Group to appoint a new Secretary.

(b) *Revised SCAR Programme in Oceanography*

In view of the comments on the Revised SCAR Programme received from the USSR National Committee and from SCOR, it was agreed that the programme could not be adopted without further discussion. In view of the fact that four of the six individuals who formulated the original draft revised programme in Cape Town were present at this meeting, together with the Chairman of the Working Group, it was agreed to convene an informal working group meeting on Oceanography to consider the comments on the SCAR Programme and the various matters raised by the report on the SCOR Executive Meeting. This Group was requested to report to the final Plenary Session.

Working Group Reports

The following Working Group Reports were received and referred to the *ad hoc* Working Group for further consideration: Oceanography, Glaciology, Geodesy and Cartography, Upper Atmosphere, Communications.

The recommendations of the Working Groups which met during the Eighth

Meeting—Biology, Finance, Geodesy and Cartography, Geomagnetism/Upper Atmosphere, Meteorology, Oceanography and *ad hoc*—were approved after amendments had been made.

New US station

The US delegate announced plans to establish, in 1964–65, a new US station on Anvers Island. The work of this station will be concentrated on biology and glaciology.

Re-opening of "Syowa" station and Japanese icebreaker

The Japanese delegate announced the Japanese intention of re-opening "Syowa" station in 1965 and the ordering of a 5000-ton icebreaker by the Japanese Government.

United Kingdom icebreaker

The United Kingdom delegate announced that the United Kingdom Government had agreed to the building of an icebreaker-research vessel and ship-builders had been invited to submit tenders.

Election of Secretary of SCAR, 1964–67

Dr G. de Q. Robin was re-elected Secretary for 1964–67.

Acknowledgements

The President of SCAR expressed the gratitude of all present at the meeting for all the arrangements and functions which had been organised to ensure a successful meeting. He thanked especially those who had contributed review papers and shown films, the Académie des Sciences de l'Institut de France, the Comité National Français des Recherches Antarctiques, Monsieur Laclavère and the staff of the Institut Géographique National.

Dr Naudé expressed the thanks of the meeting to the officers and secretariat of SCAR.

Date and place of next meeting

SCAR accepted with gratitude the invitation of the Chilean National Committee to hold the Ninth Meeting of SCAR in Santiago, Chile, in 1966. (See Recommendation VIII. General-9 of the *ad hoc* Working Group of Delegates.)

ANNEX

***Ad hoc* Working Group of Delegates**

L. M. Gould (Chairman), R. Bost, W. de Breuck, V. E. Fuchs, M. J. Gazin, T. Gjelsvik, G. E. Hemmen, G. R. Laclavère, P. G. Law, C. Lorius, J. H. Miller, C. M. Minnis, T. Nagata, S. M. Naudé, R. N. M. Panzarini, O. Pinochet, G. de Q. Robin, R. Schlich, H. W. Wells, A. M. Van Wijk.

Antarctic Treaty

Recommendation VIII. General-1. SCAR records with appreciation that the Resolutions of the Third Antarctic Treaty Consultative Meeting provide for continued assistance by the Treaty Governments of the scientific programmes in Antarctica being developed by SCAR.

SCAR representation on UMC

Recommendation VIII. General-2. SCAR notes the development of the Upper Mantle Project with great interest. However, SCAR does not feel that the appointment, at this time, of a specific SCAR representative on the Upper Mantle Committee would assist greatly in formulating and executing a programme in Antarctica. SCAR suggests that the best method of stimulating this project in Antarctic regions would be for National Committees for the Upper Mantle Project to co-operate closely with their own relevant National Committees on Antarctic Research.

SCAR representation on SCWR

Recommendation VIII. General-3. SCAR being convinced of the need for adequate liaison between the Working Group on Glaciology and the newly established ICSU Scientific Committee on Water Research (SCWR) and noting that the Secretary of the International Commission of Snow and Ice (ICSI) has discussed the matter with the Secretary of SCAR, suggests that Professor H. Hoinkes be invited to represent both SCAR and ICSI on SCWR and that, if he accepts, Professor Hoinkes be invited to become a member of the SCAR Working Group on Glaciology.

Commemoration of ten years of international scientific co-operation

Recommendation VIII. General-4. SCAR recommends that action be taken to mark the completion of ten years of continuous international scientific co-operation in the Antarctic and that such celebration takes place in 1966.

It is further recommended that the SCAR Executive establish a small committee to give further consideration to this proposal, to submit a preliminary report to the SCAR Executive by March 1965 and to be responsible for continued planning beyond that date.

The following suggestions were offered for further consideration:

- (1) Special articles in the major scientific journals of both SCAR and non-SCAR countries.
- (2) A special number of the *SCAR Bulletin* of increased size and more elaborate layout than usual containing reviews of the various scientific fields.
- (3) A special event associated with the SCAR meeting, i.e. emphasis on review papers.

Working Group Reports

Oceanography. SCAR expresses its pleasure at the increasing activity in the field of oceanography and its wish that this will continue. SCAR also expresses its gratification at the satisfactory co-operation with SCOR.

Glaciology. SCAR notes with satisfaction the most interesting traverse operations of the past year.

Geodesy and cartography. SCAR recognizes the heavy burden of work carried by the Secretary in organizing the systematic exchange of maps and thanks the Secretary for the valuable facilities he has put at the disposal of the group.

Upper atmosphere. SCAR notes with gratification that the successful operation of all IQSY programmes reflects the satisfactory preparations made by the Working Group.

Communications. SCAR notes that, despite major achievements by the Group in establishing satisfactory networks, there are still some difficulties being experienced with radio communications in the Antarctic, and urges the group to continue its efforts to resolve the few outstanding problems.

SCAR notes the recommendation of the Chairman of the Group that it meets on the occasion of the next meeting of SCAR and this will be considered by the Executive in planning the Ninth Meeting of SCAR.

IAAC

Recommendation VIII. General-5. SCAR is gratified to note the improved situation at the IAAC as recorded in the report submitted by the Australian Academy of Science. SCAR particularly reminds nations of the need for further contributions to the ICSU special fund for assisting scientists to travel to and work at the Centre, there being an adverse balance of \$3000 between grants approved and contributions received.

Pacific Science Congress, Tokyo, August 1966

Recommendation VIII. General-6. SCAR notes with pleasure the suggestion of the organizers of the Eleventh Pacific Science Congress, as conveyed to SCAR by Professor Nagata, that an Antarctic Symposium be held during the Congress.

Annals of the IQSY

Recommendation VIII. General-7. SCAR notes with interest the proposal to publish *Annals of the IQSY* commencing in 1966 and, if requested, is prepared to advise the SCIQSY regarding an Antarctic section.

Cosmic dust studies

Recommendation VIII. General-8. SCAR commends all National Committees to consider the interest and value of the study of cosmic dust from Antarctica, and requests appropriate Working Groups to consider the desirability of furthering such studies.

SCAR meetings

Recommendation VIII. General-9. The questions of the frequency of SCAR meetings and the date for the Ninth Meeting were discussed at length on two separate occasions resulting in the following recommendations.

(a) The next meeting of SCAR be held in 1966, and dates of subsequent meetings be arranged as necessary. Meanwhile the Executive has authority to attend to all matters requiring SCAR consideration.

(b) SCAR accepts with gratitude the invitation of the Chilean National Committee to hold the Ninth Meeting of SCAR in Santiago, Chile, the date of this meeting to be decided by the Executive in discussion with the Chilean National Committee.

Working Groups meeting at times other than the occasion of SCAR meetings

Recommendation VIII. General-10. SCAR resolves that in the cases of permanent working groups meeting other than at SCAR meetings the following procedure shall be adopted for ratifying resolutions of such meetings.

(1) Immediately following the meeting, the secretary of the group shall refer all resolutions to all permanent members of the group for comment or approval within two months.

(2) Following the acceptance of resolutions by the group, the secretary of the group shall request the Secretary of SCAR to submit the resolutions to all National Committees for comment.

(3) The SCAR Executive is authorised to approve resolutions two months after they have been distributed to National Committees, and their comments have been considered.

Finance Committee

B. P. Lambert, M. M. Somov

Recommendation VIII. F-1. That SCAR comply with the ICSU request that repayments of the \$10 000 loan to the IAAC Special Fund commence in 1964, that a repayment of \$2000 be made from the SCAR account in 1964 and that ICSU be requested

- (1) to take steps to collect outstanding national dues to SCAR, and
- (2) to make every possible effort to obtain grants to the Fund from all ICSU adhering bodies and other sources.

With the above provisions, it is expected that, provided all 1964 national dues to SCAR are paid, SCAR should enter 1965 with a credit balance of over \$4000. However, without additional income to the IAAC Special Fund, the SCAR credit balance will decrease by the end of 1965 by whatever part of the ICSU loan is repaid in that year.

Apart from these repayments to ICSU, which it is hoped will be entirely offset, in due course, by contributions to the Fund, the Finance Committee confidently expects that an income of \$15 000 pa as agreed at the Seventh Meeting will meet adequately all requirements for some years.

Biology

M. W. Holdgate (Acting Secretary and Chairman), A. P. Andriyashev, E. M. van Zinderen Bakker, J. Prévost, W. J. L. Sladen.

On various occasions the following observers also attended: R. Delepine, V. E. Fuchs, H. S. Francis, I. M. Lamb, R. Miller, P. G. Law, W. L. Tressler.

Publication of Biologie Antarctique

The Working Group proposed:

Recommendation VIII. B-1. That the thanks of SCAR be conveyed to Expéditions Polaires Françaises for their contribution to the publication of *Biologie Antarctique*.

The next SCAR Symposium on Antarctic Biology

It was agreed that provisional plans should be made for the holding of the next Symposium on Antarctic Biology in July 1968 for one week. A European venue was urged. Most members of the Working Group considered that a wide field should be covered, specialized aspects being more properly considered as sections in appropriate specialized international congresses. It was suggested that broad review papers by established authorities might be sought as well as detailed papers on current or recent research.

It was agreed that the Working Group should inform SCAR of these views and, if supported by SCAR, request the Secretary of SCAR to approach the IUBS.

It was further agreed that the theme and content of the Symposium be developed by correspondence among the Working Group over the next year.

SCOR-IUBS-IAPO-SCAR Symposium on Antarctic Oceanography

The Working Group noted the proposal to hold a Symposium on Antarctic Oceanography in 1966 under the joint sponsorship of SCOR, IUBS, IAPO and SCAR, and urged that the biological side of this meeting be as strong as possible. The Working Group on Oceanography was requested to ensure representation of the Working Group in Biology on the planning committee.

Sub-Committee on Antarctic Bird Banding

The Working Group noted the establishment of the sub-committee to co-ordinate bird banding in the Antarctic, under the chairmanship of Dr W. J. L. Sladen, and received a report. The present membership was: M. D. Murray, Australia; R. D. Etchecopar, France; F. C. Kinsky, New Zealand; W. J. L. Sladen, United States.

Two particular aspects were discussed.

(a) *Composition of the Sub-Committee.* The Working Group felt that the principle that one representative only from each SCAR nation actively engaged in bird banding should sit on the Sub-Committee should in general be maintained. However, the Sub-Committee should have the widest possible powers of consultation if it was to perform its function of aligning Antarctic bird banding with global practice. Furthermore, the Working Group affirmed that a unanimous request from the Sub-Committee to co-opt additional specialist members would be considered with sympathy.

(b) *Area to be covered by the Sub-Committee.* The Working Group felt that the Sub-Committee's official zone of interest should be the same as that of SCAR but that there was no need for equal activity in all areas.

Any species breeding within the SCAR area might be considered, and it was logical in certain cases for the Sub-Committee to attempt to co-ordinate the banding of these species outside the SCAR zone. In such cases the onus was on the Sub-Committee to make contact with the national banding organizations concerned.

The Working Group expressed its satisfaction at the activity of this Sub-Committee.

Observations on whales

The Working Group took note of the paper received from the Secretary of the International Whaling Commission requesting the co-operation of vessels in the Antarctic in recording sightings of whales. It was agreed that, irrespective of recent developments in the whaling industry and of the serious overfishing problems involved, it was important to continue to study the stocks of whales. Following discussions with the Working Group an Oceanography it was agreed to commend this paper to National Committees.

International Biological Programme

The Working Group agreed that it was appropriate to discuss the proposed IBP programmes while they were at a formative stage. Especial stress was laid on the need for intercomparability between research programmes that were to be incorporated in the global surveys under IBP. A general statement for submission by SCAR to SCIBP was drafted for approval by SCAR.

A sub-committee on Human Adaptability Programmes in the Antarctic was established with the following membership: Dr O. G. Edholm, Convenor, United Kingdom; Dr L. Irving, United States and IUPS; Dr Macpherson, Australia; Professor C. H. Wyndham, South Africa; Dr J. Rivolier, France; together with a human physiologist from USSR.

The Working Group further proposed:

Recommendation VIII. B-2. That Dr M. W. Holdgate be appointed SCAR representative on SCIBP, and that SCIBP be invited to nominate a representative to SCAR who would serve on the Working Group on Biology.

Recommendation VIII. B-3. That the paper entitled *Statement by SCAR to SCIBP* be forwarded to the Secretary of SCIBP.

Statement by SCAR to SCIBP

This statement begins with four introductory clauses.

(1) SCAR has learned with pleasure of the interest shown by the First General Assembly of the IBP in the work of SCAR in the field of Antarctic biology. SCAR will be pleased to co-operate with SCIBP and its Committees in the formulative stages of the IBP programmes. To facilitate contacts between the two bodies, SCAR proposes that SCIBP be invited to nominate a representative to SCAR who would serve on the Working Group on Biology, and wishes to designate Dr M. W. Holdgate as representative on SCIBP.

(2) SCAR welcomes Resolution 1 of SCIBP, proposed by Committee A. III, in which appreciation is expressed at the efforts of SCAR and of the Representatives of the Contracting Parties to the Antarctic Treaty to secure conservation of fauna and flora in the Antarctic, and will see that these statements are brought to the attention of the Representatives of the Treaty Powers.

(3) SCAR notes with interest the concern of SCIBP over the conservation of the fauna of pack ice and the wise use of the natural resources of the world ocean, and confirms that these matters also are of importance to SCAR. SCAR hopes that the occasion of an International Biological Programme may be marked by activity among biologists on a global scale to secure the wise use of the open sea, and hopes that SCIBP will enlist the support of SCOR and other international bodies to this end.

(4) SCAR reaffirms its interest in the oceanic islands of the circum-Antarctic seas, whose species-poor and vulnerable ecosystems are of unique importance. However, while SCAR joins with SCIBP in hoping that the study and conservation of these islands will be advanced during IBP, and will continue to work to these ends, it feels that many of the problems in both these fields merit consideration on a global basis, and will be pleased to co-operate with SCIBP if the latter considers prosecuting a worldwide scheme for the protection and examination of a representative series of oceanic islands.

Detailed comments on SCIBP sectional programmes then follow. These draw the attention of the appropriate sectional committees to some of the opportunities and special problems of Antarctic biological research in the various fields, and inform the Committee on Human Adaptability of the establishment of the special Sub-Committee of the Working Group convened by Dr O. G. Edholm.

Exchange of biological data

The Working Group concluded:

(1) That within each member nation it was vital that there be some central organization or individual able to answer enquiries concerning:

(a) Permanent repositories of national collections of Antarctic material.

(b) Organizations or individuals engaged in sorting incoming Antarctic collections and data.

(c) Systematists engaged in studying Antarctic material.

(d) Past, current, and projected Antarctic research.

The precise system adopted in each country was a matter for National Committees. The Working Group felt that such centres had important internal as well as international duties to perform.

(2) The names of such central sources of information should be included annually in the National Reports to SCAR, together with the addresses of permanent repositories and sorting centres where possible.

(3) That, as far as possible, SCAR nations should be urged to maintain, and either publish or exchange on request, lists of specialists currently studying Antarctic collections. These should be held by the information centres designated in Annual Reports.

(4) That SCAR nations should compile periodic station lists, especially for marine biological programmes and make these available through the designated national information centres to enquirers.

(5) The National Reports to SCAR represented the best framework for general data exchange and should be perfected in preference to the establishment of any new channels. The Secretary of the Working Group was asked to prepare and circulate a comparative assessment of the biological sections of National Reports so that guidelines might be established for those engaged in their preparation.

(6) The Working Group agreed that special manuals of technique and special frameworks for data exchange should only be developed when there was a clear need. The Work of the Sub-Committee on Antarctic Bird Banding and the Sub-Committee on Human Adaptability Programmes in the Antarctic were instanced as examples.

(7) The Working Group considered a paper received from SCOR (WG/18) on data exchange. While the detailed proposals in this paper were of general concern and interest, the Working Group felt disinclined at the present to enter upon a general investigation of data exchange systems. It was agreed that a copy of the section of the minutes of the Working Group dealing with data exchange should be sent to this group of SCOR, with the general re-affirmation of the Working Group's view that it was more convenient at the present time to organize separate national data centres and to exchange only the addresses of such centres, and broad outlines of research programmes, internationally.

— — *SCAR Programme on Biology* — —

Before beginning a detailed discussion of this programme, the Working Group considered the scope which it should have. A full discussion of the inter-relationship between the Working Group on Biology and the Working Group on Oceanography led to the following formula:

(a) The Working Group on Biology recognizes the essential interdependence of marine and terrestrial ecosystems in the Antarctic, and hence the inevitable convergence of interests between the Working Group on Oceanography and the Working Group on Biology. No arbitrary demarcation can be adhered to, but for the convenience of programme statement it is proposed that the Working Group on Biology consider shore-based studies including research on the benthos, fish and plankton of inshore waters while the Working Group on Oceanography consider ship-based programmes in both physical and biological oceanography. For further clarity, it is proposed that the biological section of the SCAR Programme in Oceanography be reprinted, with due acknowledgement, in the SCAR Programme in Biology and conversely that the Working Group on Oceanography be invited to reprint as an annex to their programme the sections of the SCAR Programme in Biology dealing with inshore marine studies.

It was agreed that the attention of the Working Group on Geology should be drawn to the fact that studies of palaeogeography and palaeoclimatology of the Arctic and sub-Antarctic are of particular interest to biologists.

(b) To facilitate close contact between the SCAR Working Group on Oceanography and the SCAR Working Group on Biology it is proposed that each group be represented on the other, and that where the two groups meet simultaneously joint sessions on matters of mutual interest be held.

The Working Group then considered the relationship which it should maintain with specialists in the fields of human biology and medical research. It was agreed that the title of the Working Group should be the Working Group on Biology and that medical and human biological studies came logically within this broad context. It was con-

sidered that a permanent sub-committee on medical research was unnecessary at present, but that as special needs arose in this and other fields, *ad hoc* groups of specialists could be set up.

A revised SCAR Programme in Biology was then drafted, but it was agreed that this could not be regarded as definitive until absent members of the Working Group had been consulted, and the approval of National Committees obtained.

Agreed measures for the conservation of Antarctic fauna and flora

(a) *General*

The Working Group proposed:

Recommendation VIII. B-4. That SCAR welcomes the formulation by the Representatives of the Contracting Parties in the Antarctic Treaty of agreed measures for the conservation of Antarctic fauna and flora,* which have been received enthusiastically by biologists and conservationists throughout the world.

(b) *Annexes to the "Agreed Measures"*

It was agreed that any proposals for entries upon the lists of Specially Protected Species, Specially Protected Areas, and under Annexes C and D of the "Agreed Measures" must be tentative pending ratification of the "Agreed Measures" and consultation of absent members of the Working Group. It was felt that the procedure to be adopted within SCAR for the alteration of these annexes should be, first, discussion between members of the Working Group and second, when agreement has been reached, parallel application to National Committees.

The Working Group discussed the species which might be designated Specially Protected Species under Annex A. It was considered that species included on this list should be those believed to occur in small numbers, and about which there was insufficient information. Any proposal for additions to the list should state

- (a) scientific name,
- (b) popular name of species,
- (c) reasons for the proposal.

Tentatively two species were proposed for inclusion:

(i) *Ommatophoca rossi* (Ross Seal)

Although the population of the Ross Seal may be higher than was formerly believed, the Working Group considers that the special protection of this species is desirable pending further study.

(ii) *Arctocephalus* spp., especially *A. tropicalis gazella* (Fur Seals)

The recolonization of localities where this species was formerly abundant is now proceeding from small and vulnerable nuclei which merit special protection.

It was felt that species such as *Mirounga leonina* (Elephant Seal) and others which are generally abundant but locally rare in the Antarctic should not be listed, but that in certain cases small and vulnerable breeding colonies might be protected by designation of their breeding stations as Specially Protected Areas.

Turning to Specially Protected Areas, the Working Group considered certain guidelines appropriate for their selection:

- (a) the existence of representative or unusual communities of plants and inverte-

* *Polar Record*, Vol 12, No 79, 1965, p. 457-62.

brates which cannot be effectively conserved under the general terms of the Agreed Measures;

(b) the presence of rare species of birds or mammals which depend closely on the general ecosystem and can only be conserved by protection of the total habitat;

(c) the presence of scientifically important colonies or assemblages of species which need safeguarding;

(d) the need to establish ecological reference areas to be preserved for the future;

(e) the need to protect long-term scientific studies on species or communities vulnerable to disturbance.

It is proposed that a case be stated for any addition to the list of Specially Protected Areas in the following form:

Name of area.

Position (geographical co-ordinates).

Charts or maps on which the site may be found.

Definition of proposed boundaries of area (with illustrative map).

Reason for the proposal.

The Working Group did not name any areas as proposed for inclusion at the present stage, but it was agreed that the Secretary should circularize members for suggestions and that the matter should be developed further by correspondence. It was also agreed to discuss by correspondence the contents of Annexes C and D and Dr W. J. L. Sladen undertook to consult with appropriate authorities and advise the Working Group on the proposed contents of Annex D.

Pelagic sealing

After discussion, the Working Group proposed the following statement entitled "Pelagic Sealing" for endorsement by SCAR and conveyance to National Committees.

With regard to Recommendation III-XI of the Third Antarctic Treaty Consultative Meeting*, SCAR:

(1) Affirms that the circum-Antarctic ocean, including the pack ice, is a region of great scientific interest, in which basic research is needed and on which almost all the Antarctic ecosystems depend.

(2) Affirms that this region requires conservation as a natural resource, so that its productivity and ecosystems are unimpaired and so that any exploitation may be maintained at the maximal level of sustained yield.

(3) Agrees with the Representatives of the Contracting Parties to the Antarctic Treaty that any exploitation, such as pelagic sealing or the taking of fauna in pack ice, must be based on sound scientific knowledge of the population dynamics and ecology of the species concerned.

(4) Considers that where seal stocks are exploited a record should be kept, preferably by biologists on the spot, of the dimensions, sex, reproductive condition and age of the animals taken, so that the impact of exploitation on stocks can be assessed.

(5) Urges that care is needed if the Crabeater Seal, *Lobodon carcinophagus*, is to be exploited because of lack of basic knowledge of the breeding biology of this species.

(6) Hopes that the Representatives of the Contracting Parties to the Antarctic Treaty will devise an effective mechanism for the control of exploitation of any species in Antarctic waters in accordance with these principles.

(7) Strongly urges National Committees to convey these opinions to their governments, and to direct some part of national biological research programmes toward gathering information about species liable to exploitation.

* *Polar Record*, Vol 12, No 79, 1965, p 462.

Geodesy and Cartography

G. R. Laclavère (Chairman), J. Araos, W. de Breuck, V. E. Fuchs, H. Guichard, S. Helle, Y. S. Korotkevich, B. P. Lambert, J. H. Miller, R. N. M. Panzarini, M. M. Somov, R. B. Southard, V. Schytt, W. C. Watson, H. W. Wells, W. D. C. Wiggins.

Recommendation VIII. Gd-1. That the possibilities of long-distance ties and geodetic satellite surveys continue to be investigated by members and particularly suggests that:

(a) The USA bear in mind the possibility of international co-operation in the Antarctic using SECOR or any other appropriate system.

(b) France investigate and report on the feasibility of applying its satellite photographic system to a geodetic survey connection between Antarctica and Australia, New Zealand and other continents and islands.

The Working Group considered its previous *Resolution V. Gd-1* (Wellington) dealing with special photogrammetric techniques for the location of disturbed areas of ice and snow and noted that:

(a) the matter had been referred to the International Photogrammetric Society but that no reply had yet been received from that organization;

(b) the US representative reported some satisfactory results of a general character from infra-red techniques; and asked its Secretary to pursue the matter further with the International Photogrammetric Society.

The Working Group considered the matters of standardization of map sheet assemblies, map sheet numbering, indication of source material on maps and charts, use of metric system and concluded that its previous recommendations adequately cover these matters.

Recommendation VIII. Gd-2. That for the convenience of member countries which do not normally use the metric system, future topographic maps should show a scale of kilometres, statute miles and nautical miles together with an altimetric conversion scale of metres and feet.

Recommendation VIII. Gd-3. That for the purpose of co-ordination in map scales produced by different countries, the following scales should be used for Antarctic maps:

(a) general maps: 1:3 000 000; 1:5 000 000; 1:10 000 000; 1:20 000 000 and 1:40 000 000;

(b) topographic maps: 1:1 000 000; 1:500 000; 1:250 000 or 1:200 000; 1:100 000; 1:50 000 and 1:25 000.

Recommendation VIII. Gd-4. That the following minor variations in the SCAR Standard Symbols be used on topographic maps of Antarctica:

(a) in respect of items 16, 17, 26 and 27: use the descriptive words "definite", "approximate" and "conjectural" and symbolization as if for a "zero" contour;

(b) in respect of item 60: replace the word "station" by the words "spot heights";

(c) in respect of items 16, 20, 21, 22, 23 and 25 include a footnote "desirable to show date, if limits defined";

(d) in respect of items 25 (a), 28 (a), 39 (a) and 45 (a) alter descriptive note to read "for use on medium and small scale maps".

(e) in respect of the Explanatory Notes: include a paragraph stating that where a non-standard symbol appears on a map it should be specifically included in the map legend.

The Working Group suggests that the matter of a Geological Map of Antarctica should be referred to the next meeting of the International Geological Congress at which Dr R. J. Adie, Vice-President for Antarctica, will be represented by Dr R. W. Willett.

Recommendation VIII. Gd-5. That the Secretary of the Working Group prepare, at the appropriate times, five-yearly reports of activities similar to the chapter on cartography that has been prepared for the Antarctic Volume of the *Annals of the IGY*.

The Working Group asks that those member countries which have not so far taken action on the SCAR Recommendation to distribute gazetteers should now do so.

Recommendation VIII. Gd-6. That SCAR member countries continue mapping programmes in the Antarctic with the primary objectives of:

(a) completing a general small scale map of the continent as soon as practicable;
 (b) providing the mapping support required by other scientific disciplines and required for navigation and logistic purposes.

(c) information on cartographic activities provided in the annual National Reports to SCAR should be in sufficient detail and be distributed in time for effective use.

The Working Group noted that the USSR is preparing a report on the content of their general geographical and topographical maps of Antarctica and that copies would be forwarded to the Secretary of the Working Group early in 1965, for distribution to members.

The Working Group received the USSR notes on *Nomenclature of geographical features of ice shelves* and noted that the USSR representative would forward a copy of a fuller report to the Secretary for distribution to all members in order that the matter may be fully considered prior to the next SCAR meeting.

The Working Group heard a progress report from Dr Robin on feasibility studies into the use of satellite radio altimeters for Antarctic mapping. These studies are being undertaken at the University of Kansas, the University of New York and the Scott Polar Research Institute.

Geomagnetism and Upper Atmosphere

T. Nagata (Chairman), C. M. Minnis, M. J. Gazin, G. Pillet, R. Schlich, J. Stagg, A. M. van Wyk, H. W. Wells.

IQSY auroral maps

Recommendation VIII. Gm-1. That the offer of J. Paton, IQSY Reporter for Aurora, to prepare synoptic auroral maps for the Southern Hemisphere should be accepted as no Southern Hemisphere country is prepared to accept this responsibility.

Synoptic guide to SCAR activity in geomagnetism

Recommendation VIII. Gm-2. That the Chairman of the Working Group should seek the assistance of all Permanent Members to compile a comprehensive synoptic report on the extent of geomagnetic work in and around the Antarctic during the IGY, IGC and IQSY.

SCAR representative on COSPAR

Recommendation VIII. Gm-3. That A. H. Shapley be invited to be the SCAR representative to COSPAR.

Arising from the Working Group meeting at Berkeley, 29 August 1963:

Conjugate point studies

It was noted that R. Schlich, a member of the Working Group, had been appointed Chairman of the IAGA Working Group on Conjugate Point Programmes for Geomagnetism.

Recommendation VIII. Gm-4. That close-spaced stations at one end of a conjugate pair should be established.

SCAR contribution to WMS

Recommendation VIII. Gm-5. That the IAGA-WMS Board recommendation on securing more magnetic data from Antarctica should be transmitted to SCAR National Committees.

SCAR contributions to the Upper Mantle Project

Recommendation VIII. Gm-6. That SCAR should in principle participate in this programme though no detailed information was yet available.

Secular variations network in Antarctica

Recommendation VIII. Gm-7. That the proposal, from Professor Orlov, that a network of stations in the Antarctic should be occupied every five years should be referred to SCAR National Committees. National Committees should be requested to investigate the possibility of undertaking repeat station observations (say 3 to 5 days) at the coastal points not already occupied and at the various islands; also to inform the Chairman of the Working Group what contributions they might be able to make to the proposed network.

Method of deriving hourly values

Recommendation VIII. Gm-8. That computations of hourly values should be made whenever possible despite the difficulty of obtaining them at high latitudes.

Inter-relationship between geomagnetism and other upper atmosphere phenomena

Recommendation VIII. Gm-9. That for any area that is of interest to geomagnetism and that is related to the Upper Atmosphere Working Group joint meetings should be held.

Meteorology

M. J. Rubin (Chairman), J. Alt, W. Bleeker, V. Hisdal, K. Langlo, H. R. Phillpot, J. J. Taljaard, G. M. Tauber, T. Vinje. H. H. Lamb attended on 25 August. Members of other delegations attended the meetings from time to time.

Definitions of the functions, and terms of reference of the Working Group taking into account those of the relevant bodies of WMO

Recommendation VIII. M-1. That the following new terms of reference for this Working Group should be established:

(a) The Working Group will give a broad specification of the problems of Antarctic meteorology and the general nature of the research and investigation involved in their solution.

(b) The Working Group will make recommendations for the stimulation and co-ordination of meteorological research programmes concerning the Antarctic, as well as for the most effective use of the data relating to these programmes.

(c) The Working Group will make recommendations for the exchange of data required for meteorological research programmes concerning the Antarctic.

(d) The Working Group will recommend to SCAR measures necessary to collaborate with other bodies such as WMO, IAMAP or their parent bodies in order to carry out the programmes listed under (a) to (c) above.

(e) The Working Group will strengthen close collaboration between the several scientific disciplines within SCAR through research programmes and symposia.

Data exchange

This item was studied on the basis of the Statement by SCAR on Scientific Data Exchange and on suggestions made by members of the group. It was agreed that the Working Group would mainly concern itself with exchange of checked data. It was also

agreed that the group may formulate, as necessary, recommendations for SCAR to submit to WMO on research requirements connected with the transmission of meteorological data. The group noted certain deficiencies in the exchange of meteorological data.

Recommendation VIII. M-2. That (1) all countries carrying out meteorological observations in the area of interest to SCAR should send their checked data as quickly as possible to at least one of the WDC's. This could be done by sending in data in one of the following ways, listed in the order of preference.

(a) By tabulated sheets copied from decks of punch cards.

Note: reference is made to *Recommendation V.M.-15, SCAR Bulletin No 10, 1962, p 148.*

(b) By handwritten or typed out lists, e.g. in the standard forms as were recommended by WMO for the IGY.

(c) By means of published year books or other publications in which data are contained.

Note: Method (b) is preferred over (c), since (c) method usually results in delay.

(2) All countries carrying out observations on physical meteorology in the area of interest to SCAR, to send their checked data to the relevant world centres established under the auspices of WMO.

The data should be forwarded on standard forms recommended for this purpose by WMO.

The work and problems of the IAAC

Recommendation VIII. M-3. That (1) pending developments in the establishment of a WMO World Centre in the Southern Hemisphere, the IAAC should continue in operation with the present terms of reference;

(2) members of SCAR continue to support the IAAC by seconding suitably qualified meteorologists to the Centre;

(3) members consider the possibility of making contributions to the ICSU Special Fund set up to assist the IAAC.

(4) SCAR should express its great appreciation to the Australian authorities, the staff of the IAAC and all contributory countries for the efficient operation and significant achievement of the Centre under the generally difficult conditions which have prevailed with regard to professional staff and data availability.

The Working Group examined a number of suggestions with regard to the priority of work at the Centre, and as a result suggested that where necessary the Centre may wish to consider adopting the following priority of work:

(a) Operational activities during the summer season.

(b) Completion of the chart series.

(c) Research and investigation activities, in particular relating to the STRATWARM programme during IQSY.

(5) That requests for additional services by the Centre, such as the provision of copies of the analysed chart should be addressed, by the Working Group members concerned, directly to the IAAC for possible solution on a bilateral basis.

Symposium on Antarctic Meteorology

The Working Group considered that there had not been sufficient time to develop a programme for and to make arrangements for adequate papers to be presented to a symposium on Antarctic meteorology if held in 1965.

Recommendation VIII. M-4. That (1) a symposium giving adequate representation to the particular problems of Antarctic meteorology, and to comparisons between Arctic and Antarctic meteorology, be organized and that collaboration with WMO and the ICPM of IAMAP be sought.

(2) That the symposium should be held in 1966, preferably in Europe, immediately before the Ninth Meeting of SCAR.

(3) The Chairman of the SCAR Working Group on Meteorology in collaboration with the Secretary of SCAR should arrange for presentation of the salient points of this symposium in an appropriate manner at the Ninth Meeting of SCAR.

(4) Only extended abstracts of papers with suitable figures should be published. Authors should arrange for publication of individual papers in appropriate scientific journals.

Recommendations to WMO on requirements for Antarctic meteorology

The Working Group noted that in the past it had concerned itself with operational matters relating to the scientific programme. In accordance with the decision of the Working Group with regard to its terms of reference (*Recommendation VIII. M-1*), and in view of the terms of reference of the newly established WMO Working Group on Antarctic Meteorology, the Working Group recommends:

Recommendation VIII. M-5 A. That the WMO be invited to consider and take action on the following pending questions of an operational character:

(a) The need for countries to ensure that their expedition and transport ships, and also their whaling ships, when operating in Antarctic waters provide regular meteorological reports.

(b) The need for improving the transmitting of reports from "McMurdo" to Mirny and from "SANAE" to Mawson.

(c) The possibility of retransmitting the upper air reports from all Antarctic stations collected by the IAAC in the Australian national broadcasts from Canberra.

(d) The particular question raised in a letter from the Chairman of the SCAR Communications Working Group to the Secretary of SCAR concerning the improvement of the transmissions between Port Stanley and "McMurdo".

Since the WMO has technical commissions consisting of experts dealing with particular aspects of meteorology, such as instruments and methods of observations, it was felt appropriate to invite WMO to consider certain particular problems relating to instruments and methods of observations in the Antarctic which are of common concern.

Recommendation VIII. M-5 B. That considering:

(1) that the equipment used at present in the Antarctic for carrying out meteorological observations is not always suitable for use there;

(2) that special precautions and special reduction methods are often necessary in order to obtain the most reliable meteorological data;

(3) that not only SCAR members but also many other countries are making observations under conditions of extreme cold, low relative humidity and high winds;

WMO be invited to (1) recommend to its members that special attention be given to the development of instruments for use under conditions similar to those in Antarctica;

(2) prepare a chapter in an appropriate guide on the difficulties encountered when making observations under conditions similar to those encountered in Antarctica.

Revision of recommended scientific programme in meteorology

The Working Group examined the scientific programme recommended in *SCAR Bulletin* No 3, September 1959, and also additional items recommended by SCAR VII for inclusion in this programme. Although it was felt that no major changes in the programme were necessary, the Working Group decided to reorganize the statement of the general scientific programme in view of the new terms of reference of the Group.

Recommendation VIII. M-6. A. That the following research items are studied:

(1) The climatology and the general circulation of Antarctic regions.

(2) The nature and extent of broadscale meteorological processes over Antarctica and the remainder of the Southern Hemisphere.

(3) The exchanges between mesosphere, stratosphere and troposphere.

(4) The heat and water budget of the Antarctic atmosphere, the interaction between the atmosphere and the snow and ice sheet and the surrounding seas.

(5) Meso-meteorological phenomena in the Antarctic, particularly in the vicinity of the coastline.

B. That in order to carry out these investigations successfully:

(1) individual stations for meteorological observations of general and special character be maintained for a period of at least 10 years;

(2) every effort be made to extend the existing network;

(3) all expeditions or wintering parties organized for other disciplines make meteorological observations in order to supplement those of the regular network.

C. That the following observations be taken at meteorological stations:

(1) Synoptic surface and upper-air observations.

(2) Observations of radiation, including those with balloon-borne net radiometer, and observations of albedo.

(3) Micro-meteorological observations and measurements of the temperature of the ice and snow at various depths.

(4) Ozone measurements (surface, total amount and vertical distribution).

(5) Chemical observations (including those of radio-active and stable isotopes) of air, precipitation, and deposition.

(6) Measurements of blowing snow, and the direction, wavelength and form of sastrugi.

(7) Morphological determinations of falling snow.

(8) Observations of noctilucent and mother of pearl clouds.

It is recommended that the observations be carried out in accordance with the pertinent procedures and practices laid down by WMO.

It should be noted that this programme is only a statement of general research objectives and the nature of observations required. Within these objectives specific scientific programmes will be developed through continuing consultations amongst members of the Working Group. Such proposals will be brought to the attention of SCAR in due course.

Meteorological programme for the IQSY

The Working Group noted with appreciation the efforts already made to fulfil the international programme for the IQSY in Antarctica, and urged members to make continued efforts to implement those elements of the programme in which there still are deficiencies.

The Working Group noted the special attention paid to stratospheric studies in the IQSY programme adopted by the CIG-IQSY Committee and WMO. An important element in this programme is the current analysis of the stratospheric data for the preparation and issuing of warnings of sudden stratospheric warmings (STRATWARMs) so that special and additional meteorological soundings can be made to provide detailed data for a study of this phenomenon. As part of its programme, the IAAC will carry out a study of stratospheric warmings and will issue the STRATWARM "alerts" within the scheme established by WMO. It is expected that the SCAR nations will assist in every way possible to make this important scientific programme a complete success.

In accordance with *Recommendation VIII. M-2*, SCAR members are urged to make available the special IQSY data as soon as possible after checking. It is expected that an analysis of these data will be of particular importance in planning future programmes.

Co-ordinated programmes of ozone sonde ascents during the spring warming

The Working Group noted the suggestion from the British National Committee for the SCAR Meteorological Working Group:

"To consider whether recent advances in ozone sondes justify the initiation of a co-ordinated programme of ascents during the spring warming of the atmosphere".

It was further noted that there will in fact be a co-ordinated series of ozone sonde ascents in the Antarctic as a part of the IQSY programme. The Working Group felt that meaningful data will result from this programme and invites particular attention to the importance of making such special soundings during the periods of the spring warming in response to the "alerts" that will be issued by the IAAC. It is considered that an understanding of the spring warming phenomenon is so important that such additional ascents are justified even at the expense of soundings in the other months.

Radioactivity measurements in Antarctica

The Working Group discussed the recommendation of the Chilean National Committee in regard to promoting the interest of all SCAR members in measurements of radioactive isotopes and the importance of exchanging data.

The Working Group noted that this subject was already included in the programme and that measurements of artificial and natural radioactivity in air and precipitation were already carried out at one station at least.

It was considered essential to obtain detailed information about which isotopes should be measured. The Working Group decided to solicit expert advice. The problem will be discussed further by correspondence.

Next meeting of the Working Group

The Working Group considers that an evaluation of the results of the IQSY programme in Antarctica will be useful in providing guidance for developing future meteorological research plans. For this reason it proposes that its next meeting be held at the time of the joint symposium, recommended in *Recommendation VIII. M-4*, with the view to preparing the evaluation and any recommendations that would result therefrom.

Ad hoc Working Group on Oceanography

R. N. Panzarini (Chairman), A. P. Andriyashev, J. Araos, E. M. van Zinderen Bakker, G. E. Hemmen, M. W. Holdgate, H. H. Lamb, J. Prévost, W. J. L. Sladen, M. M. Somov, T. Torii, W. L. Tressler.

SCAR Programme in Oceanography

The proposed SCAR programme in oceanography was discussed in the light of the suggestions offered by SCOR and the National Committee of the USSR. The present draft of the programme will be circulated among members of the Working Group not present at the Paris meeting.

Symposium on Antarctic Oceanography

Recommendation VIII. O-1. That (1) an organizing committee composed of a Chairman, Secretary, two scientific members and one scientific secretary, be set up to take care of all matters concerned with the Symposium on Antarctic Oceanography to be held in 1966.

(2) The organizing committee be nominated by the present Working Group on

Oceanography and appointed, if approved, by the Executive. The Group welcomed the SCOR suggestion that Dr G. E. R. Deacon assist with the formulation of the programme as SCOR representative and recommends

(3) the Biology Working Group be invited to nominate a representative.

Permanent representative of SCOR on SCAR

As a representative from SCOR to SCAR, the Working Group would like to suggest the names of R. L. A. Capurro (Argentina), R. I. Currie (UK) or J. W. Brodie (NZ).

Plankton hauls in the southern Indian Ocean

Recommendation VIII. O-2. That SCAR nations operating in the south Indian Ocean be suitably equipped and scientifically staffed to make plankton hauls for the Indian Ocean Biological Centre using the Indian Ocean Standard Net.

Liaison between Oceanography and Biology Working Groups

Recommendation VIII. O-3. That if the Biology and Oceanography Working Groups do not meet concurrently, each group formally be represented at meetings of the other.

Relationships between SCAR biology and oceanography programmes

It is proposed that in both the proposed scientific programmes for biology and for oceanography, the marine biological aims be repeated.

EXCHANGE SCIENTISTS IN THE ANTARCTIC 1963-64

| Country of origin | Name | Subject | Host country |
|-------------------|----------------------|-------------------|---------------------------------------|
| Chile | G. H. Araneda | Marine biology | USA (<i>Eltanin</i>) |
| | E. Avaria Placier | Microbiology | |
| | E. Araya Pfeng | Hydrography | |
| | H. Pizarro Callejas | Meteorology | |
| Japan | T. Cho | Glaciology | USA ("McMurdo") |
| | Y. Kabayashi | Biology | |
| | T. Torii | Geochemistry | |
| | N. Yamagata | Glaciology | |
| | Y. Yoshida | Glaciology | |
| United Kingdom | C. W. M. Swithinbank | Glaciology | USSR ("Novolazarev'skaya") |
| USA | J. Jacobs | Upper air physics | USSR ("Vostok") |
| USSR | G. E. Grikurov | Geology | United Kingdom (Stonington Island) |
| | V. S. Ignatov | Geophysics | USA ("Byrd") |

PERMANENT WORKING GROUPS OF SCAR

Biology

(Amendment to *SCAR Bulletin*, No 10, 1962, p 133)

Working Secretary: Dr M. W. Holdgate, British Antarctic Survey Biological Unit, Queen Mary's College, Mile End Road, London, E. 1.

Communications

(Amendment to *SCAR Bulletin*, No 14, 1963, p 235)

New Zealand: R. Cassey, Divisional Engineer (Radio), Engineer-in-Chief's Office, Post Office, Wellington.

Geology

(Amendment to *SCAR Bulletin*, No 14, 1963, p 236)

Argentina: Dr Néstor H. Fourcade, Instituto Antártico Argentino, Cerrito 1248, Buenos Aires.

PERMANENT DELEGATES TO SCAR

(Amendments to *SCAR Bulletin*, No 16, 1964, p 307-08)

Australia: B. P. Lambert, Division of National Mapping, 22-34 University Avenue, Canberra City, ACT.

IUPS: Dr L. C. G. E. Pugh, Division of Human Physiology, National Institute for Medical Research, Holly Hill, London, N.W. 3.

NATIONAL COMMITTEES OF SCAR

(Amendment to *SCAR Bulletin*, No 16, 1964, p 307)

Belgium: Comité special belge de la Recherche scientifique dans l'Antarctique, c/o Dr L. M. Malet, Secrétaire, IRM, 3 Avenue Circulaire, Bruxelles, 18.

**INTERNATIONAL ANTARCTIC ANALYSIS
CENTRE (IAAC), CHANGE OF ADDRESS**

The new address of the Centre is: 501 Swanston Street, Melbourne, C. 1.

Mail, however, should continue to be addressed to: PO Box 1289K, Melbourne, C. 1.

H. R. Phillpot, who has been leader of the IAAC since its establishment in 1959, has been awarded a 6-month post-graduate scholarship by the Commonwealth of Australia Public Service Board in order to complete a study of Antarctic climate. The study leave began in October 1964 and is being taken at Melbourne University. J. C. Langford, Bureau of Meteorology, is attached to the Centre during H. R. Phillpot's absence.

**NEW UNITED STATES METEOROLOGICAL
REPORTING STATION**

A new United States meteorological station started operation on 1 October 1964 and will continue to operate until 28 February 1965.

Particulars are as follows:

Index number: 89675

Name and position: "Little Jeana". Lat $81^{\circ} 23' S$, long $170^{\circ} 45' E$

Elevation: 54 m

Synoptic observations: at 00, 03, 06, 09, 12, 15, 18 and 21 GMT

Upper air observations: an unspecified number of pilot-balloon observations

Weather reporting from "Beardmore", lat $83^{\circ} 17' S$, long $175^{\circ} 45' E$,

Index number 89677, was discontinued on 1 October 1964.

ERRATA

Isotopes in relation to polar glaciology. *SCAR Bulletin*, No 17, 1964, p 31²-23.

The author wishes it to be made clear that the introduction to this article includes the statement of the scientific aims which were formulated by the SCAR Working Group on Glaciology, and published in *SCAR Bulletin*, No 18, 1964, p 335-36. A reference to the source of this statement was included in the original draft of the paper in French, but was omitted inadvertently when the paper was translated into English.

NOTICE

The SCAR Bulletin is published in England in January, May and September each year as part of the *Polar Record*, the journal of the Scott Polar Research Institute.

Contributions are invited, and should consist of factual notes on the membership, equipment and activities of Antarctic parties; articles on matters of particular interest in connection with these activities are also welcome. Contributions should be sent to the Editor, Scott Polar Research Institute, Lensfield Road, Cambridge, England.

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