INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS

No. 4 January 1960

SCAR

SPECIAL COMMITTEE ON ANTARCTIC RESEARCH

BULLETIN

ARGENTINA AUSTRALIA BELGIUM
CHILE FRANCE JAPAN NEW ZEALAND
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UNITED STATES OF AMERICA

PUBLISHED BY
SCOTT POLAR RESEARCH INSTITUTE, CAMBRIDGE, ENGLAND
INSTITUTO ANTARTICO ARGENTINO, BUENOS AIRES, ARGENTINA

Reprinted from THE POLAR RECORD, Volume 10, Number 64, January 1960

S.C.A.R. BULLETIN

No. 4, January 1960

Programmes for 1959–60

Norway. No expedition is to be sent to Antarctica at the end of 1959. Personnel and equipment will be returned from "Norway" station early in 1960 in the *Polarbjørn*.

South Africa. An expedition left for Dronning Maud Land in November 1959 to take over "Norway" station on the coast of Antarctica. The wintering party will consist of seven scientists and three technicians under the leadership of J. J. la Grange, who was a member of the Trans-Antarctic Expedition, 1955–58. The scientific programme will include meteorology (surface and upper air), auroral physics, geology, geomagnetism, radiation and physiology.

United States. An attempt will be made to penetrate the Bellingshausen Sea during the coming season. Two icebreakers, U.S.S. *Glacier* and *Burton Island*, are expected to arrive in the area in February 1960 to take part in the operation. Both ships are equipped with helicopters for reconnaissance and scientific work. The scientific programme is to include oceanography, cartography, geology, biology and glaciology.

New scientific stations in Antarctica, 1959

The Soviet station "Lazarev" was established on 10 March 1959 in lat. 69° 58′ S., long. 12° 55·4′ E. on Prinsesse Astrid Kyst, Dronning Maud Land. It is situated on the ice shelf 10 km. from the coast, in an area where the ice shelf extends northwards for about 100 km.

The station consists of three main buildings connected by covered passages. The largest building, with an area of 80 sq.m., is divided into compartments for radio, meteorology, a dark-room, living-room and three bedrooms. The power-house nearby contains two 26 kW. generators which are used alternately. There is also a store. The meteorological laboratory is 50 m. away from these buildings, and 120 m. away are emergency living-quarters, power station and radio hut. A tent depot was set up 9 km. away containing reserve supplies of food and fuel. There is a runway for ski-equipped aircraft nearby.

Personnel consist of a geographer (Yu. A. Kruchinin, also the leader), two meteorologists, a radio-operator, doctor and two mechanics. The scientific programme includes meteorology (surface and upper air), glaciology, geography and magnetism.

As a result of the first 6 months' observations, the following information has been gained. The direction of the prevailing wind is easterly, and the average velocity is 15·3 m./sec. rising, during a 12-day period of blizzards in April, to an average of 21·3 m./sec., and a maximum of more than 60 m./sec. The mean temperature was −18·5° C., with a minimum of −46·7° C. on

3 September. The average annual temperature was estimated at about −15° C. Annual accumulation of snow is 1 m. and the mean surface density is 0·3. The depth of the sea near the station is 700 m.

The Soviet station at the Antarctic Pole of Inaccessibility [Polyus Nedostupnosti] was established on 14 December 1958 in lat. 82° 06′ S., long. 54° 58′ E., 2100 km. from "Mirnyy" and at an altitude of 3720 m. The object of the station was to form a temporary base for programmes of scientific observations and an auxiliary base for inland traverses; there is no intention that it should be manned throughout the year.

During the period 14 to 26 December 1958 observations were carried out in the disciplines of meteorology, glaciology, seismology, magnetism and gravity. Observations of air temperature, pressure and humidity, temperature of snow surface, wind direction and velocity, cloudiness, atmospheric phenomena and visibility were made four times daily, as were actinometric observations of total, dispersed, and reflected radiation of the sun, and of radiation balance. Glaciological work consisted of temperature recordings of the névé from the surface down to 50 mm. as well as in small pits, determination of ice thickness by seismic soundings and of the physical properties of the névé by means of ultrasonic techniques. Magnetic observations were made at frequent intervals to determine the horizontal and vertical components of the magnetic field of the earth.

As a result of these observations the following information was gained about the area of the Pole of Inaccessibility: meteorological conditions were typical for inland areas in "East Antarctica" and differ only slightly, at least in summer, from those around "Sovetskaya" and "Vostok". Cyclones, however, were heralded by more typical cyclonic disturbances than in the area around "Sovetskaya". Heavy deposits of hoarfrost of 8 cm. in thickness result in a very soft snow surface of densities of only 0·11 to 0·14 g. per cu.cm. Air temperature varied from −37·4° to −27·5° C., the maximum temperature was usually at mid-day and the minimum in the early morning. Temperatures in the 50 m. deep bore-hole at the zero amplitude level were used to determine the mean annual air temperature, which is about −56·8° C. Fluctuations of atmospheric pressure were within the limits of 603·8 to 613·9 mb. The mean relative humidity was 56 per cent. The prevailing wind direction was northern, and the average velocity was 3·6 m./sec. Clouds were mainly cirrus. Bedrock is 770 m. above sea-level, and the thickness of the ice cover 2950 m., including a névé layer of 140 m. These observations formed a final link in the chain of observations carried out from the Davis Sea to the Pole of Inaccessibility.

A combined living and working hut was transported from "Mirnyy" on a sledge. With an area of 20 sq.m., it is divided into two compartments. The one provides living accommodation for four men and includes an electrically operated kitchen. The other part is a workshop containing a gasoline-driven drill and a 12 kW. generator, meteorological instruments and a 70 W. radio. An airstrip, 30 m. wide and 1200 m. long, was made near the hut. The station was temporarily closed on 26 December, when 5 months' supply of provisions for four men and some 7 tons of fuel and lubricants were left in the hut.

Antarctic climatological studies

An Antarctic climatological study, similar to those published by the United Kingdom and South Africa, is in preparation by Argentina.

S.C.A.R. Bulletin

S.C.A.R. Bulletin is now reproduced in Spanish by the Instituto Antártico Argentino.

Antarctic radio communications

By A. H. SHEFFIELD[1]

In former years expeditions sailing for the Antarctic lost all contact with the world after their last port of call and were not heard of again, sometimes for years, until their return to civilization. Nowadays they are in constant radio contact and can send back reports to their home countries every day, while members of expeditions can even be connected via the public telephone service to their own homes. Veterans of earlier expeditions are sometimes heard to disparage this regular misuse of radio service, but there can be no doubt of the value and importance of effective communications, not only for safety of life but for the effective prosecution of the scientific objectives of the modern expedition.

This was realized in the early planning stages of the Antarctic programme for the International Geophysical Year, and an International Working Group on Antarctic radio communication was set up, representing each of the twelve nations participating in that programme and the World Meteorological Organization. The first task of this Working Group was to prepare a plan for the collection and dissemination of weather and other messages, and for this purpose a network of seven mother and forty daughter stations was arranged. The plan provided for daughter stations to transmit reports to their mother stations at fixed times; and the mother stations passed on the collected information to the Antarctic Weather Central at "Little America V" or "N.A.F. McMurdo". Arrangements were made for relays and duplicate reception in case of difficult working conditions, and the Weather Central broadcast meteorological information five times daily throughout the I.G.Y.

A major difficulty in radio communication nowadays is that the frequency spectrum is overcrowded. Too many radio transmitters are using too few frequencies. For the Antarctic programme provision had to be made not only for local transmissions between mother and daughter stations, and between those stations, mobile parties, and temporary bases, but for long distance communication to the home countries of the various expeditions, and for their ships and aircraft. Radio beacons were set up here and there, and provision has to be made for amateur radio operators at many bases. It was decided at an early stage that frequencies for the new stations would be sought in the internationally recognized frequency bands, and the Internationa

[1] Chairman of Working Group on Communications.

Frequency Registration Board co-operated in clearance of the frequencies put forward by the Working Group, which in effect had constituted itself as a temporary frequency clearing agency for the Antarctic. When the I.G.Y. began, over 60 radio stations were operating in the Antarctic, using more than 1000 separate frequencies. Each frequency had to be checked to ensure that there was no duplication, or likelihood of interference with other stations. Where there appeared to be a danger of interference suggestions for other frequencies were made. In the event, no complaints of interference between Antarctic stations, or interference with other traffic, were received by the Working Group during the whole period of the I.G.Y.

All available information about the Antarctic radio network was collated in the *International Geophysical Year 1957–58; Antarctic Radio Communication Manual*, Pergamon Press, London, 1956, and a revised edition was published in 1957, in time for the beginning of the I.G.Y. The manual included lists of bases with their geographical positions, radio frequencies to be used, information on procedures, time signals, standard frequency signals, call signs; schedules of meteorological broadcasts, and other information likely to be of use to radio operators.

When it was decided to continue Antarctic research under the auspices of S.C.A.R., the I.G.Y. plan for collection of meteorological information was reviewed. In place of the Weather Central at "Little America V" an International Antarctic Analysis Centre was established by the Australian Bureau of Meteorology in Melbourne and began operations in February 1959. The I.G.Y. Working Group on Radio Communications was succeeded by a similar body under S.C.A.R. and, although the Group has not yet met, the members have been in correspondence with each other to revise their plans as necessary. The I.G.Y. network was taken as a basis for the S.C.A.R. system, but experiments are being carried out to discover better methods of passing information to the new Analysis Centre. These include arrangements for collecting and relaying all South American data to "N.A.F. McMurdo" through "Ellsworth", where radio teletype equipment is being installed. "Ellsworth" has been taken over from the United States by Argentina, and radio tests between Buenos Aires and "Ellsworth", and between "Ellsworth" and "N.A.F. McMurdo", are about to be made.[1] The aerials at "N.A.F. McMurdo" are to be rearranged to provide for direct transmission to Melbourne instead of passing traffic through Musick Point, New Zealand, and it is hoped this change will improve the reliability of the link between those two stations.

The Antarctic Whaling Ship collective broadcast from Pretoria was generally being received satisfactorily in Melbourne earlier in 1959, but it is intended to augment this by the use of the cable, or by a direct point-to-point radio transmission over the Pretoria to Perth link, which should give reliable reception throughout the year.

Transmissions from "Mirnyy" are generally received clearly in Melbourne, as are those from Mawson and "Wilkes", which include data collected from their daughter stations.

[1] See p. 87.

Reports from the Falkland Islands Dependencies are broadcast by Port Stanley Radio three times daily, two of these transmissions being picked up by "N.A.F. McMurdo", and there is a point-to-point transmission between Stanley and "N.A.F. McMurdo" daily at 19.00 hours to complete the remaining synoptic information, and to check on any data missed in the broadcasts.

Although there has been considerable progress in rearrangement of the Antarctic radio network, finality has not yet been reached, and it is clear that further tests will have to be conducted in order to ensure that, within the limitations imposed by conditions in this difficult area, the radio links are as effective as possible.

In Antarctic radio many problems confront engineers and operators. Aerial supporting masts and towers must be designed to withstand high wind pressures, and heavy snow deposits. Equipment is subjected to stresses and strains by wide variations of temperature. Auroral absorption problems are considerable and interruptions are caused by geomagnetic and ionospheric disturbances. On the whole, however, atmospheric interference due to the blizzards which are so frequent in the Antarctic did not cause significant interruption of traffic during the I.G.Y., and it is hoped that similar good fortune will attend the operations of the S.C.A.R. stations.

During the I.G.Y. meteorological information was sometimes late in arriving at the Weather Central. Attempts were made to discover the causes of such delays and to apply remedies, because, although delay can be accepted where the information is for climatological or research purposes, it could be dangerous where it is to be used by aircraft crews in flight planning. There is no firm evidence that, given properly planned radio stations, regular and reliable communication between them should not have been possible, and it appears that some of the difficulties were attributable to operational procedure. It cannot be too strongly emphasized that, apart from the occasional poor propagation conditions, it is the radio operator who can ensure success—by careful selection of the optimum frequency for the time of day, accurate tuning and regular maintenance of equipment, and co-operation with his colleagues at the other end of the circuit. In the report on I.G.Y. operations by Dr Ward, the Australian representative on the S.C.A.R. Radio Working Group, he referred to satisfactory communications between Australia and the Antarctic by radio amateurs using powers only of the order of 50 W. on single sideband transmitters, which suggest that effective links for the S.C.A.R. programme will be provided in due course. It is hoped that the Antarctic Symposium to be held in Buenos Aires in November 1959 will give an opportunity for discussion of current planning and to produce suggestions for improvements.

I have referred above to the importance of the radio operator in ensuring effective communications, and I should like to take this opportunity of paying a tribute to all those who have been entrusted with the responsibility of operating the Antarctic radio stations during the past three years. Operation in Antarctic conditions is an exacting task, particularly where traffic is heavy and long hours at the key are necessary. Spare parts are not always available and the Antarctic radio operator, in addition to taking his share of the

domestic duties of the base, often has to act as his own mechanic, fabricating spares for his equipment from the most unlikely material. As well as being skilled as an operator and mechanic, the operator at a small base must therefore be an enthusiast.

The next few months will be occupied in reviewing the present communications network, on the lines described above; but in a programme of this nature all concerned must be ready to make alterations to keep pace with changing conditions, and only by constant attention to the problem will it prove possible to perfect the network so that collection and dissemination of meteorological and other data will be complete and effected with the minimum of delay. Close co-operation by the participating countries will be the keynote, and the experience of the I.G.Y. shows that this will be readily available.

Recommendations on procedures for visual auroral observation in Antarctica

By O. SCHNEIDER[1]

(1) *Introduction.* These recommendations were drawn up by the S.C.A.R. reporter for upper atmosphere physics in consultation with individual auroral workers in S.C.A.R. countries, as directed by a resolution of the third S.C.A.R. meeting, Canberra, 2–6 March 1959. It is the purpose of these recommendations to render visual auroral data more useful as a means for supplementing all-sky camera observations with the objective of drawing synoptic maps of auroras. Messrs D. Barbier, C. W. Gartlein, M. Huruhata, F. J. Jacka, J. Paton, A. H. Shapley, I. L. Thomsen and A. M. van Wijk kindly sent suggestions, comments and other information.

(2) *General instructions.* No essential changes seem to have been introduced by the different national Antarctic agencies in their present observing procedures and instructions as compared to those used during the I.G.Y. It is therefore recommended to adopt the chapter on "Visual Auroral Observation", by S. Chapman, in the *I.G.Y. Manual* as a basic guide (*Annals of the I.G.Y.*, vol. IV, part II, pages 41–103; Pergamon Press, London, New York, Paris, 1957); Antarctic observations, however, should in any case be more complete than the "minimum programme" described there in section 2 (pages 51–56).

(3) *Observers.* Traverse parties, supply and relief expeditions, etc., should be encouraged to participate in the visual auroral programmes.

(4) *Observing times.* A desirable maximum programme will comprise an observation every quarter hour during the whole period of darkness, on all days. Possible intermediate plans would be hourly or tri-hourly, and a minimum plan would call for observations only at the regular weather observing times. World Days and Alerts (see section 9) offer an opportunity for intensified programmes to those observers or parties who would normally observe only on a limited schedule. Whichever the particular scheme adopted, it is important for the eventual synoptic processing of the data that, whenever observations are made, they should be on the hour and quarter hour of Universal Time.

[1] S.C.A.R. reporter on Upper Atmosphere Physics.

(5) *Description and quantitative features.* (*a*) *Auroral forms.* The full auroral classification as given in the international *Photographic Atlas of Auroral Forms* and in the *I.G.Y. Manual* is recommended. Intermediate forms and sunlit rays should be carefully recorded, but no particular symbols are suggested for the time being.

(*b*) *Brightness.* The four-degree scale should be used.

(*c*) *Colours.* It is suggested that observers should describe colours in terms of their own choice.

(*d*) *Angular measurements.* Important features to be measured are: on auroral forms with sharp lower border, the apparent highest point (elevation and bearing), the turning points (if "hooked" form), bearings to extremities, and suitable intermediate points; lower and upper limits of rays (of each portion if broken); radiation point of coronas; upper and lower limits, as well as lateral extremities, of bands and surfaces. Elevation should be determined with special care when the point measured is low over the horizon.

(*e*) *Events.* The following events are of interest, and whenever possible should be recorded in addition to quarter-hourly entries, giving their time to the nearest minute: sudden appearance or vanishing of aurora; change of quiet homogeneous into active rayed forms, or *vice versa*; onset and cessation of flaming or pulsation; movements, either of the aurora as a whole or of distinct features, giving times, direction, sense, and apparent speed.

(6) *Auroral logs.* Date and time of individual entries should be stated in Universal Time. If double date according to local standard time be specified, this should be clearly stated. Logs should also contain entries on observing conditions (cloud, moon, twilight, etc.). Impossibility of deciding whether aurora is present should be stated as such; the assertion "No aurora" should be used most carefully. Different entries should be made for "No observation made" and "Observation made but no aurora present". A distinction should also be made between "Beginning (or end) of display actually witnessed" and "Aurora present at beginning (or end) of observation".

(7) *Plots.* The use of sky blanks as plotting forms is strongly recommended.

(8) *Analysis sheets.* Lists with quarter-hourly entries summarizing the main features of auroral displays are considered useful for later synoptic processing of data.

(9) *World Days.* Fixed-date World Days of different kinds are listed below in the "International Geophysical Calendar 1960". In addition, *Alerts* (some of them world-wide; others regional, called "Advance Alerts") as well as *Special World Interval* (SWI) will be declared following specified geophysical or solar events. Auroral observers will pay special attention to the particular type of Alerts called "Auroral Alerts", but intensified auroral observing schedules are also justified in the case of Magnetic Storm Alerts, and during SWI's. Some types of warnings will not distinguish between the different kinds of Alerts, and observers who get only this simplified information should start an intensified programme in any case. Alert warnings and SWI declarations will be released by the World Warning Agency at 16.00 U.T. of the days concerned, and intensified observational activity should be started upon

receipt in the field, and continued for 24 hours as a minimum; new messages may declare continuation of an SWI, usually after 2 or 3 days. World Warning Agency, AGIWARN, is at Central Radio Propagation Laboratory, Box 178, Ft. Belvoir, Va., U.S.A. Regional warning centres are at Canberra (Australia), NIZMIR (U.S.S.R.) and Kokubunji (Japan). AGIWARN will also act as a regional centre, and coded messages will be broadcast by WWV and WWVH.

(10) *International Geophysical Calendar 1960.* Regular World Days (highest priority in italic): Jan. 12, *13*, 14; Feb. 16, *17*, 18; Mar. 15, *16*, 17; April 19, *20*, 21; May 17, *18*, 19; June 14, *15*, 16; July 12, *13*, 14; Aug. 9, *10*, 11; Sept. 20, *21*, 22; Oct. 18, *19*, 20; Nov. 15, *16*, 17; Dec. 13, *14*, 15; 1961: Jan. 17, *18*, 19. Regular World Intervals: March 15–24; June 14–23; Sept. 13–22; Dec. 13–22. World Meteorological Intervals: same as before, plus 1960 Jan. 11–20. Special Days: Jan. 4 (meteors); Mar. 27 (solar eclipse); April 21, 22 (meteors); May 4, 5 (meteors); July 28, 29, 30 (meteors); Aug. 10, 11, 12, 13 (meteors); Sept. 16–22 (Provisional International Rocket Week, dates to be confirmed by COSPAR); Sept. 20 (solar eclipse); Oct. 19, 20, 21 (meteors); Nov. 16 (meteors); Dec. 12, 13, 14, 22 (meteors).

International Antarctic Analysis Centre

By W. J. GIBBS[1]

The International Antarctic Analysis Centre is operating at 468 Lonsdale Street, Melbourne, Australia. Equipment of the Centre includes: (*a*) an Ozalid photocopying machine, (*b*) three teletype machines, over which all incoming reports are received, and (*c*) a facsimile receiver unit, over which all the analysed charts and data from the Central Analysis Office of the Bureau of Meteorology are received.

Through the good offices of Dr H. Wexler, the United States I.G.Y. National Committee donated the library from the "Little America V" Weather Central to the I.A.A.C.

The Commonwealth Division of National Mapping has constructed a new base synoptic chart which will be used in future for routine analysis in the Centre.

The programme of analysis originally proposed was : (*a*) surface synoptic analysis of the southern hemisphere south of lat. 30° S. twice daily (at 00.00 and 12.00 G.M.T.), and (*b*) synoptic analysis for 700, 500 and 300 mb. c.p. surfaces for the above area at least once daily (00.00 G.M.T.), with probable additional synoptic analysis for these surfaces for the Antarctic area (south of lat. 60° S.) at a supplementary hour (12.00 G.M.T.). However, with the present professional staff, the programme is confined to: (*a*) analysis twice daily of the 700, 500 and 300 mb. constant pressure charts over the Antarctic continent and adjacent islands, (*b*) daily preparation of coded statements (WMO code FM45) on the 00.00 G.M.T. analysis released 30 hours after the synoptic hour, (*c*) subsequent re-analysis of charts following the entry of

[1] S.C.A.R. reporter on Meteorology.

delayed data, and (*d*) microfilming the re-analysed charts seven days after the close of the month.

H. R. Phillpot of the Bureau of Meteorology, and Meteorologist in Charge of the I.A.A.C., began duty in January 1959, and was joined by K. T. Morley, Senior Meteorologist of the Bureau of Meteorology, in February. Mr Morley worked in the Weather Central at "Little America V" station during 1958. T. I. Gray of the U.S. Weather Bureau, and formerly Officer in Charge of the Weather Central, "Little America V", joined the I.A.A.C. at the end of June 1959, and Lt.-Cdr. J. Timbs, a meteorologist of the Royal Australian Navy, joined early in August. After a brief period while Lt.-Cdr. Timbs was becoming familiar with the duties and requirements of his position, Mr Morley returned to duty with the Central Analysis Office of the Bureau. The Bureau had undertaken to provide only one meteorologist to the Centre, but attached Mr Morley in addition to Mr Phillpot in the early stages in order to facilitate the establishment of the new Centre. There are also ten assistants and an observer in charge.

Microfilmed copies have been made of the surface, 700, 500 and 300 mb. charts and of plotted cross-section diagrams for all Antarctic and sub-Antarctic observing points, beginning with June 1959. With the present professional staff at the Centre it is not possible to analyse completely all of these charts and diagrams, and the 700, 500 and 300 mb. charts are analysed for the Antarctic continent and adjacent sub-Antarctic islands at 12.00 G.M.T. but extended northwards to about lat. 30° S. at 00.00 G.M.T. daily. Copies of all microfilms are furnished free of charge to each of the countries associated with S.C.A.R. and to W.M.O. Countries have been advised through their S.C.A.R. delegates that additional copies may be obtained on a repayment basis.

Since September 1959, statements in standard W.M.O. code form describing the topography of the 700, 500 and 300 mb. surfaces over the Antarctic continent and adjacent sub-Antarctic islands have been disseminated within the Australian communications network, and have also been broadcast on the meteorological subcontinental transmissions from Station AXM, Canberra. The time of issue of statements has been dictated by the time of receipt of reports. Except during periods of radio blackouts, statements are issued 30 hours after observing time, and broadcast three hours later. Arrangements have been made for the transmission of the required South African data by radio and cable. This service is operating satisfactorily.

No data are yet being received from the continent of South America. However, in July 1959, the Director-General of the Servicio Meteorológico Nacional of Argentina expected that it would be possible to pass the required data via "Ellsworth" station, and the Director of the Instituto Antártico Argentino has recently stated that communications tests between Buenos Aires and "Ellsworth" are about to be made. He has requested that similar tests be made between McMurdo and "Ellsworth" station and this is in hand. In the meantime, since 1 August, Argentina has been sending copies of its daily surface weather map, together with raw data from the upper pressure levels, at about weekly intervals by air mail.

McMurdo has been intercepting FICOL broadcasts and relaying the messages on to Melbourne. This service began in March 1959, although the degree of success obtained averages only about 40 per cent.

The bulk of Antarctic data is received from McMurdo by way of New Zealand and Sydney. Reports are received direct in Australia from both "Wilkes" and Mawson, the latter also transmitting those reports received from the "daughter stations". Reports transmitted direct from the Australian stations and through McMurdo are received regularly (although at times delays are considerable) but with reports received only through the McMurdo–New Zealand channel the percentage received is quite low. Even for McMurdo, the Antarctic terminal of this major communication link, the percentage of surface reports received over quite a long check period averaged only 76 per cent.

The period between lodgement and receipt of South African reports is four to six hours, which at the present stage of operations is considered satisfactory.

The most serious delay in receipt is with data from the Antarctic continent. Originally the time of 12 hours after time of observation was considered desirable for the issue of analyses. With the present delays in receipt of reports issue of statements at this time is quite impracticable. The percentage of reports received from Antarctica within 12 hours on an average day would not exceed 30 per cent in the case of surface reports and even less for the upper air reports, which are the more important in Antarctica. Approximately 70 per cent of surface reports and about 60 per cent of upper air reports are normally received by 36 hours after observation time.

Recently officers of the Bureau of Meteorology have discussed the communications problem with Australian and United States communicators, including the establishment of a direct communications channel between McMurdo and Australia, following the recommendations of the Third Meeting of S.C.A.R. These matters are receiving continuing attention by officers of the Bureau of Meteorology, Department of Civil Aviation, A.N.A.R.E., O.T.C. and United States Navy. From discussions and experience it seems clear that two reliable communication channels are required between Antarctica and Australia for the transmission of meteorological traffic for I.A.C.C. The S.C.A.R. Working Group on Communications will, it is hoped, evolve a satisfactory plan for Antarctic communications.

Six months after its establishment the Centre is able to produce effective analyses of circumpolar charts.

The main difficulties now facing the Centre are: (*a*) The absence of any reports from the mainland of South America; this is expected to be overcome in the near future. (*b*) The poor quality of Antarctic communications; this will probably not be satisfactorily resolved until the Melbourne–McMurdo channel is in operation. (*c*) The shortage of analysts. The analysis programme of the Centre should occupy up to six experienced professional meteorologists, and every opportunity should be taken to encourage meteorologists of member nations to engage in research work in the Centre. Accommodation is adequate for such workers.

The International Antarctic Analysis Centre has produced the first of the series of Synoptic charts for the surface 700, 500 and 300 mb. levels for 00.00 and 12.00 G.M.T. daily, together with plotted time sections for certain selected stations for the month of June 1959. Copies have been sent to each of the national delegates of the countries associated with S.C.A.R., and to the W.M.O.

Organizations interested in acquiring copies of these charts should apply through their national delegates. The cost of each set, despatched by air mail, is £3 per month.

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.

Printed in Great Britain at the University Press, Cambridge