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SCAR BULLETIN

No. 6, September 1960

Conservation of nature in the Antarctic

Based on a paper read at the Antarctic Symposium at Buenos Aires, 1959.

BY ROBERT CARRICK*

CONTENTS

Introduction

Man's impact on his environment inevitably affects the indigenous plants and animals of the regions he occupies. It is their environment too, and any change in the situations to which all forms of life are nicely adjusted is likely to be detrimental to them. Much of this is unavoidable, due to increasing economic needs, but some of it is both unnecessary and highly undesirable. It is due to wasteful over-harvesting, uncontrolled interference, ill-advised introductions of alien forms, destruction of the resources on which flora and fauna depend, and, in general, to lack of well-informed long-term planning during the earlier stages of human occupation. The Antarctic region, the last to be invaded by man, now presents both a challenge and an opportunity. Serious and permanent impairment of biological values has been confined, so far, to the soils, vegetation, seals and smaller petrels of some sub-Antarctic islands, but the increase in continental stations, and in human activity around Antarctica and its seas, is a threat not to be ignored.

Concern for the welfare of the Antarctic fauna, especially the more unique forms of wildlife which sometimes suffer obvious losses at the hands of man, has been widely expressed by the nations now operating in this area. At the 3rd meeting of SCAR, independent representations on this subject were made by Argentina, Australia, France, the United Kingdom and the United States, and the eleven member nations present unanimously noted the need for conservation of the Antarctic flora and fauna, and recommended that the means of protection be studied.[1] A similar resolution was adopted during the Antarctic Symposium at Buenos Aires,[2] and it is noteworthy that these views are supported as strongly by non-biologists and non-scientists as by those whose opportunities and material for research are affected.

The more evident losses, such as among penguins and seals due to direct human interference, are merely one aspect of the wider and more complex problem of conservation of the Antarctic and sub-Antarctic flora and fauna,

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marine and terrestrial, as a whole. The solution will often be a compromise in the face of legitimate human needs. Its long-term value will depend upon our scientific grasp of the ecological and behavioural relationships within the biotic community, as well as between it and the new and potent intrusion of man and his works. Scientific information, even at survey level, is still inadequate for the drafting of a final and comprehensive plan; but useful interim measures can certainly be prepared now.

The relative importance and urgency for protection varies according to the species involved, the viewpoint adopted, and the nature and imminence of the forces of destruction. It is important to recognize clearly on what grounds the preservation of particular species or associations of Antarctic animals or plants is commended, and how the necessary measures are likely to accord with other aspects of man's life in the Antarctic. All forms of life have scientific value, and if penguins and seals enjoy wider appreciation and are more frequently cited in this paper, their close dependence on marine invertebrates and fish should be borne in mind; the same principles of conservation apply to all.

Aims of conservation

The case for conservation of flora and fauna is threefold: scientific, aesthetic and economic. The weight given to each of these values varies according to the human viewpoint and the species involved, and although these purposes are not always mutually exclusive, when they are it is essential to define priorities clearly in each situation.

Scientific. The scientific claim is always strong, and particularly so in the Antarctic. Study of undisturbed flora and fauna should precede the extension of human activity. Here one of the most rigorous climates in the world has produced living forms which represent the end-point in structural, physiological and ecological adaptation to extremes of low temperature, high wind and day-length. It is the extreme character of biological adaptations in the Antarctic—such as the fitness of warm-blooded penguins and seals for marine life; or the maturation of the gonads of the Emperor Penguin (*Aptenodytes forsteri*) in May, a month before the winter solstice; or the suspended animation of the Elephant Seal Louse (*Lepidophthirus macrorhini*) during prolonged immersion at sea[3]—that offers information of fundamental importance on the extent to which anatomical, physiological, and behavioural mechanisms are perfectable, as well as clear evidence on how they combine to serve ecological ends. The paucity of species in this relatively uniform environment, especially on land, with consequent simplification of interacting systems, offers possibilities for quantitative evaluation of the role of individual species that cannot be found in richer regions. The discontinuous distribution, and the gregarious, overt and regular breeding habits of some penguins, petrels and seals, facilitate census work, sometimes of the entire world population. This enables fluctuations of numbers and distribution to be assessed on a scale and with an accuracy seldom attainable elsewhere. The approachability on land of many birds and seals, the ease with which they can be permanently marked and

observed, and their constancy of location, ensure an unusually rich reward for the student of population ecology and behaviour.

Biogeographical research into problems of the distribution and origins of the flora and fauna of the southern hemisphere, and into related questions of continental drift and the former relations of land masses, is being assisted by evidence from present and fossil plants and animals, especially on sub-Antarctic islands. Many of these oceanic islands, little disturbed by human influence, present biological peculiarities such as floristic and faunistic poverty, a high degree of endemism, and an increased ecological amplitude of the species present, while offering excellent opportunities for the study of insularity. Comparative study of related species through a wide latitudinal range will throw light, for example, on the factors that limit geographical range and control breeding.

The conservation plan should include provision for adequate field study of populations and areas with long-term guarantees from interference. Good conservation measures depend, finally, on sound knowledge of the numbers, distribution, movements, food and other requirements, seasonal cycles and behaviour of the animals and plants concerned. Economic exploitation of fauna and flora should be firmly based on comparative scientific study of natural and commercial populations.

Aesthetic. The aesthetic appeal of most forms of wildlife justifies their conservation, and this is especially true of the Antarctic fauna. Penguins, albatrosses and seals enliven the bleak landscape and open sea, they often occur in spectacular numbers while many are closely approachable and pursue their private purposes regardless of our presence. The intrinsic attractiveness of penguins, enhanced by their upright gait and reciprocal curiosity toward us, places them high indeed on the list of birds that particularly merit our protection.

No less important is the mental and spiritual recuperation derived from contact with living nature, especially to those who are becoming introspective, worried and stressed. Even in ordinary life, where avenues of escape are more plentiful, this often proves an effective one, to which psychiatrists and many people in all walks of life have paid tribute. In the isolation of an Antarctic party, where there are few outside interests capable of filling the mind with pleasant, objective and impersonal thoughts, and of helping to restore perspective, the social value of the local wildlife cannot be overestimated.

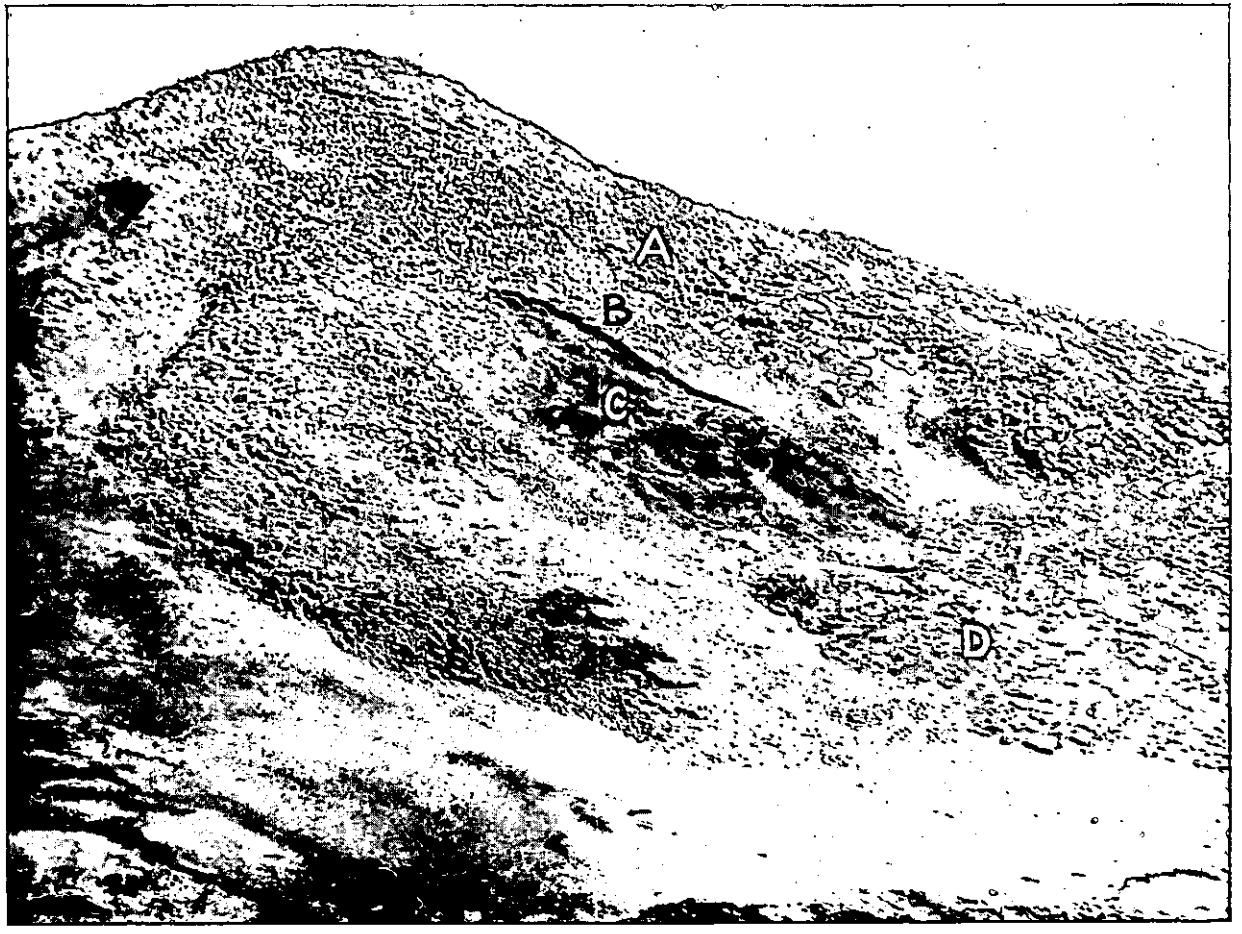
Economic. Man's requirements of food and the raw materials obtainable from plants and animals are met partly by harvesting natural populations and, to a lesser extent in the sub-Antarctic, by introducing domesticated or wild food-animals into native pastures. These activities have taken place throughout the sub-Antarctic and Antarctic, with results which have often been regrettable and sometimes disastrous, except from the viewpoint of immediate and temporary profits.

Whaling operations in both Arctic and Antarctic seas are the classic example of over-exploitation of natural, living resources. The free-for-all

methods employed for so many decades, with increasing technical efficiency of weapons and ships, have seriously depleted the numbers of whales. Large-scale commercial operations on terrestrial fauna have centred mainly on the Fur Seal (*Arctocephalus* spp.), and the Elephant Seal (*Mirounga leonina*), with lesser attention to other seals and some penguins. The value of Fur Seal pelts led to the rapid and complete extermination of large populations on many islands, such as Macquarie Island,[4] and serious over-harvesting of Elephant Seals for oil reduced stocks to unprofitable levels.[5] The extensive studies of the Elephant Seal by Laws[6] have done much to put this industry on a less empirical basis. An attempt, in 1959, to resume operations on this species on Macquarie Island was rightly repulsed by Australian public opinion and the Australian Academy of Science; the information on natural population changes emerging from the branding of some 500 pups annually since 1949 is far more valuable to commerce, as well as to science, in the long run.[7] Commercial sealing still continues at South Georgia and Kerguelen, but improved regulations at the former include the issue of licences to limit the kill, the resting of a different quarter of the island each year in rotation, the establishment of four reserves, and the keeping of records of the estimated age of killed bulls.[5,8] Evaluation of the permissible take of these animals, which will harvest the true surplus without depleting the breeding capital, is a complex ecological and possibly behavioural problem.

On a smaller scale, seals, birds and eggs are used to provide food for men and dogs. The necessity for this is recognized, though it is attended by the same risks as larger enterprises. For example, at Mawson in 1954 at least 93 Weddell Seals, including breeding cows, were taken around the station, and by 1958 the species no longer bred on the local inshore islands and was recorded only farther afield. Similar cases could be cited elsewhere, for, when even small demands exceed the local supply of harvestable surplus and capital is reduced, a vacuum is easily created. The limited dispersal, and constancy of return of many species to the same place, tend to delay recolonization. Eggs and immature stages can usually be taken in large numbers without detriment to the colony or species, because of the heavy natural mortality early in life; but continual disturbance, in a manner to which the breeding adults react adversely, may still cause desertion in favour of more peaceful sites.

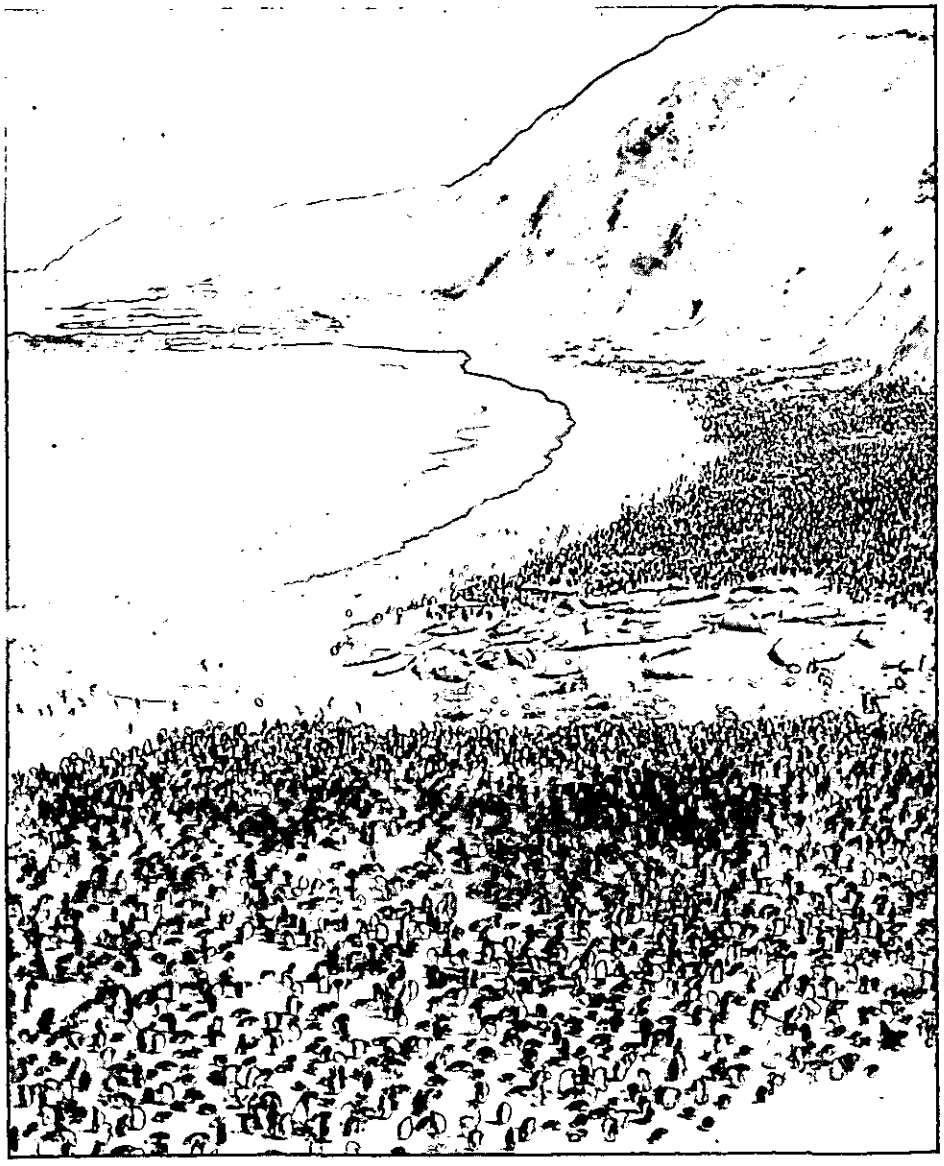
Exotic herbivorous animals have been introduced to several sub-Antarctic islands as a useful emergency food measure and in order to create supplies of familiar and more palatable fresh meat and milk. Wild species introduced by sealers and governments include the rabbit (*Oryctolagus cuniculus*) and reindeer (*Rangifer tarandus*); domestic ones are sheep, cattle and goats. The effects of uncontrolled grazing, especially by rabbits, on these highly susceptible pastures and soils are devastating. Predaceous species also introduced, intentionally or otherwise, include cats, dogs, rats and mice. The repercussions of introductions are always imponderable, and the risk is highest to indigenous plants and animals where there are no native herbivores and carnivores, and consequently no defence systems. The communal habit is adequate protection for eggs and chicks against the few native predators. Only those introductions



(*Facing p.* 69)

Rabbit damage to vegetation at Petrel Peak, Macquarie Island. Selective grazing of tussock-grass has led to extensive soil erosion. The dark area A is stable tussock, the light area B is grass killed by rabbits. The area C shows where secondary turf has been unable to hold soil on the slope, and a landslip of soil and peat has occurred from C to D. Eventually rock screes replace the original vegetation, and recovery is impossible.

Photograph by A. B. Costin



Royal Penguins and Elephant Seals at Nuggets Bay, Macquarie Island. These penguins are the non-breeding overflow from the enormous colonies up the valley. Sealers formerly took 10,000 yearlings here annually.

Photograph by R. Carrick

absolutely essential to man's life in the Antarctic region should be permitted; the effects of herbivores on local vegetation should be closely studied and tempered by rotational grazing; and the utmost precautions should be taken to prevent the escape of any type of predator, and to deal with those that do escape.

Problems of conservation

The problems of nature conservation in the Antarctic, and the measures required to achieve success, are no different in principle from those in other parts of the world. Man's occupation and development of this region are still slight, and so, in general, are his effects on the flora and fauna. At present, the scientific and aesthetic importance of Antarctic animals and plants far outweighs their limited commercial value, though this could change and radically alter the situation. This is an opportune moment to take stock of the problems, current and potential, with the scientific approach that is required to see them in perspective, to understand the real causes of each, and to arrive at effective answers.

A much over-simplified picture of biological cycles in the Antarctic community will help as a background to specific problems. All forms of life fit into an intricate interacting system in which the numbers of component species ebb and flow in time as each capitalises upon others to over-produce its kind and cause the compensatory mortality, heaviest in the early stages, which eventually equates death-rate with birth-rate and maintains equilibrium. Food-chain relationships between species tend to be specific, often highly so, and to determine the season and rate of production at the most favourable time of year, as well as to set the level of survival during the least favourable season. The bewildering complexity of inter-specific relationships is somewhat simplified in the Antarctic by the paramount dependence even of most terrestrial fauna on sea-foods. The prolific upsurge of marine life in summer provides abundant quanties of plankton, which sustain the breeding of large numbers of mammals and birds; the terrestrial distribution of these latter is the result, mainly, of scarcity of suitable sites within reach of the appropriate food-supply; and their over-all numbers are annually reduced to the winter level, when less plentiful or less available Antarctic foods cause wide dispersal and even migration out of the region.

The main threat to Antarctic wildlife has yet to materialize; but if, as has been suggested, a food-hungry world were to turn to the Antarctic seas for supplies, and if the lower organisms in the food-chains were to be taken in quantity, this could have profound and permanent effects on higher vertebrates such as whales, seals and birds. This is in accordance with the most important principle of conservation, that preservation of the habitat, especially food, its most vital resource, far outweighs measures to prevent more direct losses, from which all wild populations have a high capacity to recuperate. International agreement will be required to meet this problem, to prevent over-harvesting of wildlife, and to declare as sanctuaries foraging areas around breeding-places. Scientific biological study, oceanographic and terrestrial, is

essential to determine the inter-relations of life forms and the probable effects of man's utilization of them. The quantitative ecological approach has to be complemented by study of other aspects, especially behaviour. Social organisation, for example, may create its own harvestable surplus, as in the polygamous Elephant Seal, but the repercussions of interference with this should be fully understood.

International co-operation and equality of standards are also required to deal effectively with the more direct threats to wildlife on land, which result from commercial exploitation, local utilization and human activities in general. Agreement on permissible harvests and methods, allocation of reference study populations and sanctuary areas from the viewpoint of the Antarctic as a whole, and consistency of aims and measures throughout the region, are essential. The lessons of other parts of the world should be applied; the variety of conservation laws among European countries, with the surprising diversity of approach and legislation are errors to be avoided. The Antarctic is a natural biogeographical entity, and artificial national boundaries have rather less significance for the indigenous inhabitants than for those who make them.

The highly specialized character of the Antarctic flora and fauna, the lack of buffers and defences against unaccustomed interference and attack, the special vulnerability of seals and penguins when out of their natural element the sea, and the tameness and approachability of most Antarctic wildlife, all contribute to a situation that calls for more than ordinary consideration on the part of the human intruder. Accidental damage is easily done and often not realised, as when breeding birds are disturbed by too frequent visitors on foot, by too persistent attention from photographers, or by sight-seeing helicopters close overhead. These cause panic and temporary desertion of eggs or chicks, which fall prey to waiting predators. Losses also occur from thoughtless or careless acts, such as pumping of ships' bilges close inshore, permitting huskies to run free, or negligent driving of vehicles over seals and penguins. We are not always fully alive to the true reaction of wild animals to our presence and interference. Species and individuals vary, and the same individual penguin may stand its ground at the nest-site once brooding has started, but desert its site and mate if disturbed during pair-forming, as banded birds have shown. Penguin colonies show remarkable tenacity for their chosen breeding-place, despite serious disturbance. The New Zealand–United States base at Cape Hallett was situated in an Adélie Penguin (*Pygoscelis adeliae*) colony, through which the airstrip also ran, but the birds persisted in re-invading the strip and endeavouring to nest among the huts. An Antarctic "National Park", or more than one, containing some of the finest scenery and wildlife of this region, situated with a view to tourist access and internationally controlled to conform with the best national park principles, would be an asset of world-wide value for the future.

Scientific study entails collecting specimens as well as handling and marking wildlife. This causes no loss even when sizeable samples are taken, and it will bring permanent gain. Rare vagrants may be collected as proof of identity, for they seldom survive, but remnant and colonizing groups, especially at the

fringe of their range, have greater scientific value alive. The removal of the small colony of King Penguins from Heard Island to Australian zoos is a mistake not to be repeated. The "control" of natural predators is a misguided policy, and "blood sports" as understood in civilized communities have no place in the Antarctic, with the exception of the hunting of rabbits, reindeer, Weka, and possibly a quota of ducks on islands. The local harvesting of eggs, seal meat, etc., for food should conform to the same rules as commercial practices, and should not interfere with animals reserved for pleasure or study.

The introduction of exotic animals to the susceptible Antarctic environment is another aspect of interference with habitat, and the new balance which results from their successful establishment can hardly be other than detrimental to indigenous flora and fauna.

Conclusions

Effective prevention of direct damage and disturbance to flora and fauna depends, ultimately, on the goodwill of all concerned. This can stem only from an appreciation of natural values and a sense of responsibility for community interests. When these are lacking in normal life, it is not easy to inculcate them into party members who undergo a short period of training before spending a year in the Antarctic. It is even more difficult in the case of brief summer visitors, ships' companies, and perhaps one-day tourists. Regulations are necessary, but the attitude of consideration and sense of personal responsibility which will achieve most will derive from knowledge and understanding of the life and behaviour of Antarctic animals, and from an appreciation of them as an unrivalled natural heritage.

Throughout the world, the plants and animals that are products of the land are the property of the owner nations and subject to national laws of wide diversity and efficacy. The living products of the coastal seas, within the territorial limits claimed, enjoy similar legal protection. Those of the oceans are either subject to international agreements (e.g. whales) or free for all. The flora and fauna of sub-Antarctic islands come under the jurisdiction of the parent country, though distance and expense usually combine to make their protection difficult. The Antarctic continent itself is unique in view of the high measure of international co-operation and goodwill in current activities there, and the absence so far of exploitative forces that would seriously threaten wildlife.

An opportunity to take full advantage of this situation now exists. SCAR provides a forum at which scientists can discuss these problems and can recommend the lines of action which will lead to nature conservation in Antarctica. The Antarctic Treaty provides for the first time an opportunity to put into effect a uniform scheme over the whole region south of lat. 60° S., with which it is hoped the conservation policies for the more northerly sub-Antarctic islands would be integrated.

References

[1] *SCAR Bulletin*, No. 3, 1959, p. 32.
[2] *SCAR Bulletin*, No. 4, 1960, p. 64.
[3] M. D. MURRAY. Ecology of the Louse *Lepidophtherus macrorhini* Enderlein 1904 on the Elephant Seal *Mirounga leonina* (L.). *Nature*, Vol. 182, 1958, p. 404–05.
[4] S. E. CSORDAS. Breeding of the Fur Seal, *Arctocephalus forsteri* Lesson, at Macquarie Island. *Australian Journal of Science*, Vol. 21, 1958, p. 87.
[5] R. M. LAWS. The Elephant Seal industry at South Georgia. *Polar Record*, Vol. 6, 1953, No. 46, p. 746–54.
[6] R. M. LAWS. A new method of age determination in mammals with special reference to the Elephant Seal (*Mirounga leonina*, Linn). *Falkland Islands Dependencies Survey Scientific Reports*, No. 2, 1953.
The Elephant Seal (*Mirounga leonina* Linn). I. Growth and Age. *FIDS Scientific Reports*, No. 8, 1953.
The Elephant Seal (*Mirounga leonina* Linn). II. General, social and reproductive behaviour. *FIDS Scientific Reports*, No. 13, 1956.
The Elephant Seal (*Mirounga leonina*, Linn). III. The physiology of reproduction. *FIDS Scientific Reports*, No. 15, 1956.
[7] R. CARRICK *and* S. E. INGHAM. Ecological studies of the southern Elephant Seal *Mirounga leonina* (L), at Macquarie Island. *Mammalia* (in press).
[8] W. N. BONNER. Exploitation and conservation of seals in South Georgia. *Oryx*, Vol. 4, No. 4, 1958, p. 373–80.
[9] M. C. DOWNES, *et al.* The birds of Heard Island. *ANARE Reports* (Melbourne), Series B, Vol. 1, 1959.

Scientific stations in Antarctica, 1960

[The following amendments have been notified to the particulars given in 'Scientific stations in Antarctica 1959. *SCAR Bulletin*, No. 2, 1959, p. 15–26, and No. 5, 1960, p. 64–65.]

Argentina

Ellsworth
Personnel: Leader, J. H. Suarez.
Scientists in charge of disciplines: A. Antinucci, physiology; J. C. Luna Perez, biology; W. P. Johnson, meteorology.
Total: 3 scientists, 16 technicians, 8 others.

Decepción
Personnel: Leader, L. Messiga.
Total: 1 scientist, 9 technicians, 4 others.

Melchior
Personnel: Leader, P. Sciumbe.

Esperanza
Personnel: Leader, E. A. Fehrmann.
Total: 1 scientist, 5 technicians, 8 others.

Orcadas
Personnel: Leader, A. Giuntini.

Almirante Brown, Teniente Camara, General San Martín — Not in operation during 1960.

Chile

Capitán Arturo Prat
Climate: Temperature, mean annual −5° C., max. 2·6° C., min. −16° C.
Personnel: Leader, R. Torrens.

General Bernado O'Higgins
Personnel: Leader, E. Bachler.

Presidente Aguirre Cerda
Personnel: Leader, F. Mansilla.

Presidente González Videla
Personnel: Leader, G. Kaempffer.
Climate: Temperature, max. −7·2° C., min. −20·8° C.
Precipitation, estimated annual water equivalent, 103 mm.

France

Dumont d'Urville
Personnel: Leader, A. Faure.
Total: 12.

New Zealand

Scott base
Climate: Temperature, mean annual −20·1° C., max. 5° C., min. −52·7° C.
Wind, mean annual 4·7 m./s., extreme 41·1 m./s.
Cloudiness, mean annual 4·7 oktas.
Facilities available: Buildings 14, accommodating 22.
Electrical power, 96 kW.
Aircraft: 1 Auster.
Personnel: Leader, J. Lennox-King.
Total: 5 technicians, 9 others.

United Kingdom

Port Lockroy (Base A)
Personnel: Leader, P. H. Leek.
Total: 5.

Hope Bay (Base D)
Personnel: Leader, C. G. Brading (survey).
Scientists in charge of disciplines: A. Allan, geophysics; J. Hampton, physiology; P. H. H. Nelson, geology; G. J. Pearce, meteorology.
Total: 15.

Argentine Islands (Base F)
Facilities available: 6 buildings, accommodating 18.
Electrical power: 15 kW.
Personnel: Leader, C. Murray.
Scientists in charge of disciplines: H. E. Aggar, geophysics; A. Miller, meteorology; B. R. Sparke, physiology.
Total: 12.

Admiralty Bay (Base G)
Personnel: Leader, C. Barton (geology).
Scientists in charge of disciplines: J. E. Ferrar, meteorology and glaciology; N. V. Jones, zoology.
Scientific programme: Geology and zoology added.

Signy Island (Base H)
Personnel: Leader, R. B. Harrison.

Horseshoe Island (Base Y)
Personnel: Leader, P. Forster.
Scientific programme: Geology, survey, physiology.

Halley Bay (Base Z)

Personnel: Leader, N. Hedderly (meteorology).

Scientists in charge of disciplines: D. A. Ardus, glaciology; C. Forrest, physiology; A. G. Lewis, ionospherics; M. Thurston, biology.

Total: 16.

Scientific programme: Ionospherics added.

South Georgia

Location: lat. 54° 16′ S., long. 36° 30′ W.

Site: on rock. Method of supply: by sea.

Climate: Temperature, mean annual 1·5° C., max. 24° C., min. −14° C.

Cloudiness, mean annual 5·6 oktas.

Precipitation, estimated annual water equivalent, 1596 mm.

Facilities available: 2 buildings, accommodating 5.

Electrical power, 175 kW.

Tractors, etc.: Massey Ferguson 35, diesel.

Personnel:

Scientists in charge of disciplines: W. N. Bonner, biology; D. Borland, meteorology.

Total: 5 scientists.

Scientific programme: Biology, meteorology—surface observations, magnetism, gravity, hydrographic survey.

Exchange of foreign observers in the Antarctic, 1959–60

Name	Country of origin	Occupation	Host country
A. C. Bogdanovich	United States	Physician	Chile
R. Dartevelle	Belgium	Meteorologist	United States
G. Dewart	United States	Glaciologist	U.S.S.R.
*L. D. Drury	United States	Meteorologist	Argentina
P. Fierro H.	Chile	Naval Officer	United States
*P. R. Fundenburg	United States	Meteorologist	Argentina
D. A. Lewis	United States	Foreign Service Officer	Australia
C. Lorius	France	Glaciologist	United States
G. McKinnon	Australia	Geographer	United States
S. Mandarich	United States	Naval Officer	Norway
*G. Mikk	United States	Meteorologist	Argentina
R. G. Miller	United States	Marine Biologist	Argentina
J. E. Rawson	Argentina	Naval Officer	United States
J. E. Sater	United States	Photogrammetrist	United Kingdom
D. Shoji	Japan	Oceanographer	United States
C. L. Trainer	United States	Meteorologist	New Zealand ("Hallett")
*W. H. Whitson	United States	Auroral Physicist	Argentina
K. A. C. Wirdman	United Kingdom	RAF Officer	United States
S. Yevteyev	USSR	Glaciologist	United States

* These observers were assigned to "Ellsworth" station, but were unable to reach their posts owing to the state of the ice in the Weddell Sea. They accompanied the Argentine supply expedition during December 1959 and January 1960.

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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