

GOUGH ISLAND—A POSSIBLE SANCTUARY

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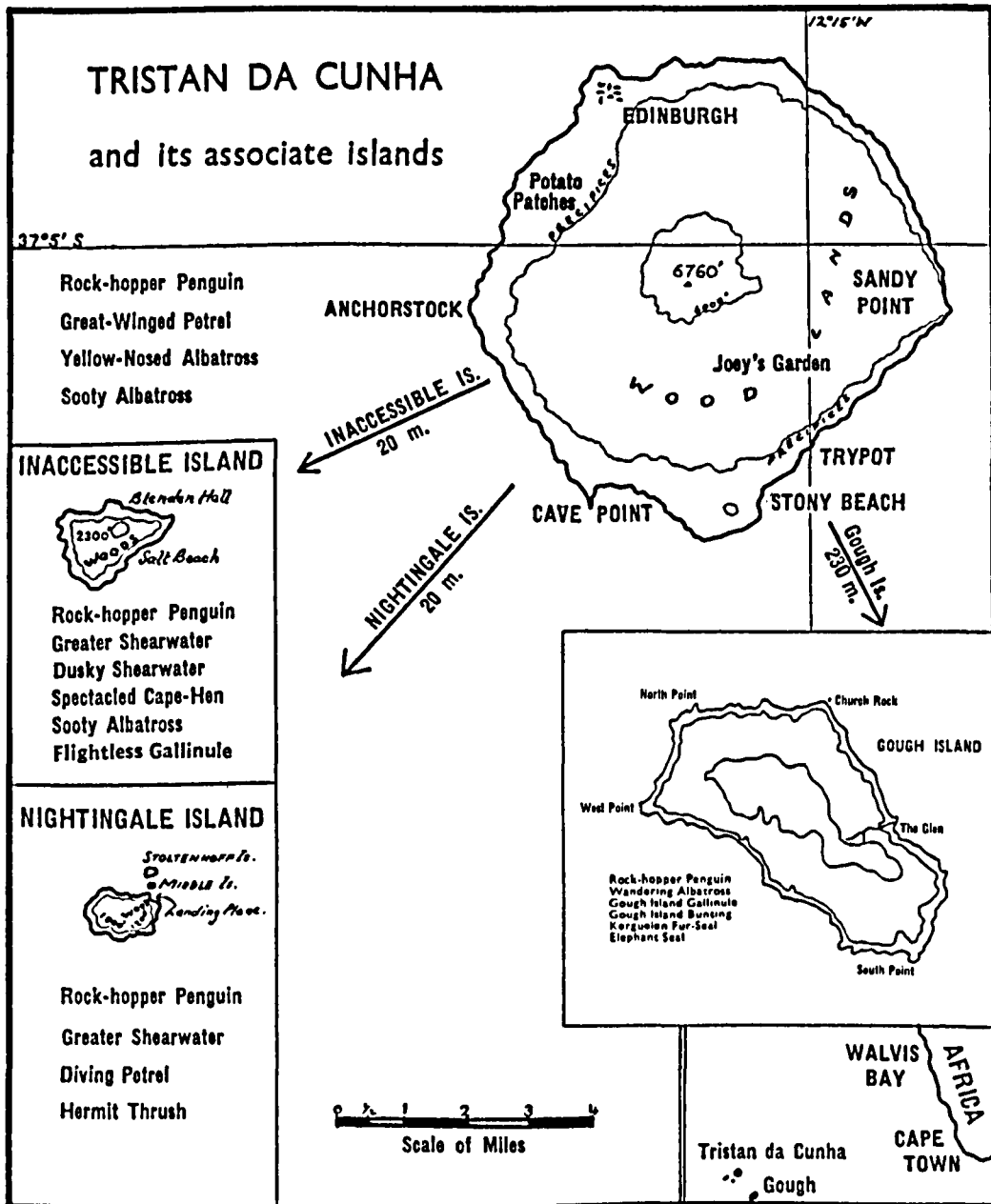
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INTRODUCTION.—The Tristan da Cunha group includes four islands ; Tristan itself with its near neighbours Nightingale and Inaccessible, and Gough Island which lies 230 miles to the S.S.E. The group was discovered by Portuguese seamen in the early sixteenth century, but permanent occupation did not begin until 1810, when a small settlement was founded on Tristan. The Tristan Islanders, who now number over 250, have visited Nightingale and Inaccessible Islands regularly, but Gough remained little visited and practically unknown until the South African Tristan da Cunha Expedition went there in 1948. As a result of this expedition the Tristan da Cunha Development Company was founded and a few years later they commenced regular exploitation of the crawfish around the coasts. In 1955 the Gough Island Scientific Survey took up residence in The Glen, Gough Island, and their hut now forms the nucleus of a South African Weather Station.

Wild Life Protection Ordinances have been in force in the group for many years. But before their introduction Tristan itself had lost many interesting species through the predation of rats, cats and men. At the present time, all the endemic birds of the group are protected, and there are measures which regulate the toll even of those species commonly killed for food. These Ordinances apply to Gough Island, although their enforcement at such a distance is impossible without the active co-operation of the men on the spot.

THE CASE FOR CONSERVATION.—Nature conservation on Gough Island can be justified both from the point of view of preserving rare species and in order not to jeopardize future research. Several kinds of flowering plant are confined to the island, including a tree (*Sophora tetraptera* forma *goughensis*) and several herbaceous species. Many of the invertebrate animals are probably also endemic. The island supports over half the known world population of the Kerguelen Fur-seal (*Arctocephalus gazella*). Two species of land bird are confined to the island—a flightless moorhen (*Porphyriornis c. comeri*) and a bunting (*Rowettia g. goughensis*). Both species are the sole living

representatives of their genera. Neither is numerous, the former having a population of about 1,000 and the latter of perhaps twice that figure. Gough is now almost the sole breeding ground of the surviving 2,000 or so pairs of the Tristan da Cunha sub-



species of the Wandering Albatross (*Diomedea exulans dabbenena*). Among commoner species, the island supports about one and a half million Rockhopper Penguins, about five million Broad-billed Prions and Soft-plumaged Petrels, and large numbers of Kerguelen Petrels, Greater Shearwaters, Dusky Shearwaters, Great-winged Petrels, Schlegel's Petrels, Great

Grey Petrels and Tristan Diving Petrels. This vast assemblage of ground-nesting petrels and shearwaters is a typical and most impressive feature of remote islands, and owes its continued existence to the absence of ground predators such as rats and cats. The introduction of these to Tristan itself has reduced the once teeming bird population of that island to a sorry remnant.

Remote oceanic islands are of peculiar interest to biologists. Gough is a perfect "text-book example" of such an island, lying as it does over 1,800 miles from South Africa and over 2,000 from South America. It is volcanic, and since it arose by eruptions isolated in mid-ocean and has never been linked to a continent by land-bridges, all its present flora and fauna must have reached it by migration across the sea. This is not easy, since the distances are so great, and the island only a tiny target, eight miles long and four wide. A study of the species that have succeeded in reaching the island throws light on the reasons for their success. Plants with light seeds, or spores, predominate, suggesting that transport by wind has been the chief agent in plant colonization. The difficulty of the process is shown by the small number of species present on the island. There are, for example, only about 40 species of flowering plant on Gough. The island of Rhum, in Scotland, has about 560 species while even the barren region of Tierra del Fuego has about 440 species. The same principle is illustrated by the terrestrial invertebrate fauna of Gough, which may only reach 250 species, in contrast to the 20,000 species of insects alone, recorded from Britain.

A remote island is thus a natural testing ground for different methods of animal and plant distribution. It is also of special significance in the study of evolution, since its animals and plants are cut off from interbreeding with parent stocks in the outside world, and tend to evolve along peculiar lines culminating in the production of unique species. If the scientific importance of a remote island is to be safeguarded, it is not sufficient merely to protect its native species. It is also essential to prevent the introduction of alien species; for the rare animals and plants of oceanic islands often owe their survival to the relaxation of competition resulting from the presence of so few species. Rare plants are likely to vanish altogether if forced to compete with vigorous aliens, just as rare birds may be ill-fitted to withstand predation.

There is also an economic reason why Gough Island merits careful conservation. The fur-seals of the island are multiplying rapidly, and represent a potential asset whose magnitude cannot

yet be accurately assessed. The example of the Pribilof Islands has shown that sealing need not exclude an increase in seal population, if it is carried out under scientific management. Not enough is known about the potentialities of Gough Island as a sealing industry to allow such management at present. There seems reason to hope, however, that careful conservation would permit not only an increase in the seal population of Gough, but also the re-establishment of considerable breeding populations on Nightingale and Inaccessible Islands. Restraints in exploitation now would probably permit a greatly increased harvest in the future, and it is most important that a watch should be kept on the seal stock with this aim in view. This argument strengthens the case for stationing a qualified warden or wild life management officer in the Tristan group.

THE PECULIAR MERITS OF THE TRISTAN DA CUNHA GROUP.—Gough Island is a typical oceanic island which has largely escaped human interference. Its value is enhanced by its proximity to the three other islands of the Tristan group. For two of these, Nightingale and Inaccessible, are uninhabited and still in a largely natural condition. Both have several peculiar species of bird, Inaccessible being famous as the sole habitat of the tiny flightless rail *Atlantisia rogersi*. Even Tristan itself retains an appreciable element of its native flora and fauna. So that the study of the group as a whole reveals the pattern of variation of the flora and fauna from island to island. In evolutionary studies in particular it is much more valuable to have data from a group of islands of this kind than from a single isolated land-mass. Furthermore, there are few such groups of islands in the world, and still fewer which remain in a relatively natural condition. Of all potential island sanctuaries, I doubt if there is one which combines so rich a fauna and flora with the same ease of access for persons interested in undertaking observations and research.

PRACTICAL PROBLEMS. (1) *The economy of Tristan da Cunha.*—From 1900–1940 the population of Tristan da Cunha increased rapidly, and this increase was accompanied by a deteriorating agriculture and trade, and a serious fall in the standard of living. Since the recent war, a great increase in prosperity has been achieved, largely because of the development of the crawfish industry. A canning factory has been built on Tristan, and two ships, *Tristania* (600 tons) and *Frances Repetto* (300 tons), spend six months in each year around the islands. The employment of islanders as fishermen has brought

money to the island where a store supplies goods from the outside world. The increased prosperity has allowed the stationing of an Administrator, a Schoolmaster, a Medical Officer and an Agricultural Officer on the island. These details are very relevant to the problem of conservation since the waters around Gough Island are an important fishing ground. The development rights there, as on the other islands, are leased to the Company, which could not continue were the lease to be withdrawn. The collapse of the Company would have disastrous consequences for the people of Tristan.

(2) *The Company's operations.*—The catching of crawfish has no direct effect on the terrestrial fauna and flora of the islands, but at Gough some harm has been done by the fishermen to the following species :—

Fur-seals.—Although these were protected more or less completely until 1957, there has been a certain amount of poaching in the past. After the census of seals made by the Gough Island Scientific Survey it was decided to permit an annual harvest of not more than 500 two- and three-year old males. This harvest of surplus males should not prevent a continued increase in seal population, provided that

- (a) selection is accurate as to age and sex.
- (b) the harvesting is done carefully and quietly so that the breeding beaches are not stamped.
- (c) The harvest is spread evenly over the beaches.

The topography of Gough Island is such as to establish a natural sanctuary for seals on the west coast, where the beaches lie below high cliffs and are washed by an almost perpetual swell. There is thus little danger of extermination.

Penguins.—The Cape Coloured fishermen on the ships have caught Rockhopper Penguins for bait. In 1955–56 some pairs of men were taking up to 30 per day. If 20 dinghies were to do this on 40 fishing days (by no means an impossibility), the toll would reach 24,000 in a season. This is a significant proportion even of the 1,500,000 estimated to breed on Gough. This is a quite unnecessary toll since fish are easy to catch and are just as satisfactory as bait. Occasional penguins are also taken for zoos.

Albatrosses.—Island fishermen used to take Yellow-nosed and Sooty Albatross chicks as food. They would certainly take Wandering Albatross if they had the chance to go up the mountain to their breeding grounds. However, since very few of these men are now fishing on the ships, this danger is slight

at the present time. The Coloured fishermen do take an occasional albatross for bait.

Flightless Moorhen (*Porphyriornis c. comeri*).—In several recent years up to 30 specimens of this rare endemic species have been taken for sale to zoos, but the South African authorities have forbidden the importation of these birds into the Union. In a sense, the presence of a reasonable number of these birds in zoos may be the best means of ensuring the preservation of the species, since they will breed in captivity, and since the introduction of rats to Gough may be hard to avoid. Provided that the species is captured only by permission of the Administrator of Tristan, and that he restricts the number of permits, I do not think that this traffic is a serious danger. This bird is secretive in its habits, and is most abundant in dense forest where its capture is virtually impossible.

(3) *The South African Weather Station on Gough Island*.—There is a considerable danger of alien introductions occurring as a result of the importation of supplies for the South African weather station on Gough Island. This is a justifiable risk while the research programme of the International Geophysical Year is in progress, but I do not think that the station should be encouraged to remain after the I.G.Y. unless its bulletins prove of outstanding value. It contributes nothing to the economy of Tristan.

The introduction of alien plants and insects is probably inevitable, but it should proceed slowly if care is taken to exclude insects from packing materials, and if the importation of hay, straw and vegetables (apart from seeds) is prohibited. The possible introduction of mammals presents more serious problems. It is especially essential to exclude rats, while cats and dogs should also be prohibited. Goats would be dangerous, since the peaty soils of Gough would be likely to come down in landslides, if the vegetation at present holding them in place were stripped off the steep slopes by grazing and trampling animals. Sheep, however, present a very difficult problem. If allowed to multiply and to range unchecked they could be as dangerous as goats, since many of the steepest slopes (particularly along the coasts) are covered by tussock grasses which sheep are known to graze selectively. These slopes are in any case unstable, and if their vegetation covering was broken up there is no doubt that erosion would proceed at a greatly increased rate. Even the weather station might be in danger if the slopes behind it were overgrazed. Equally, however, there is no doubt that sheep could graze safely

on some of the uplands and the lowland coastal fringe on part of the east side of Gough. A small number of these animals may well be permitted, but under rigid regulations. There are in fact about 12 sheep on the island at the present time. There are also a small number of hens. The importation of all other species should be strictly prohibited, and it is especially important that all domestic animals present on the island should be either killed or removed if and when the weather station ceases to operate.

(4) *Nightingale and Inaccessible Islands*.—Nightingale Island is visited on several occasions each year by Tristan Islanders who collect penguin eggs, guano and young Greater Shearwaters (for fat). These activities do not constitute a serious threat and should be allowed to continue. Inaccessible is visited less frequently. The Islanders should not, however, be permitted to deposit unwanted cats or dogs on these islands, as they are sometimes reputed to do in preference to destroying them.

RECOMMENDATIONS.—1. Gough Island should be declared an area of special scientific interest and be made a sanctuary.

2. The Company should be permitted to exploit crawfish and fish on a commercial basis. They should also be allowed to take an annual harvest of young, male fur-seals. The annual quota of seals should be reviewed from time to time. Returns of the number killed, overall length, and time and place of capture, to be provided to the Administration each year.

3. The Administrator of Tristan should have the power to permit the taking of a limited number of protected species either for zoos, museums, or special study. A permit from the Administrator should be obtained before any person other than a Company employee visits the island.

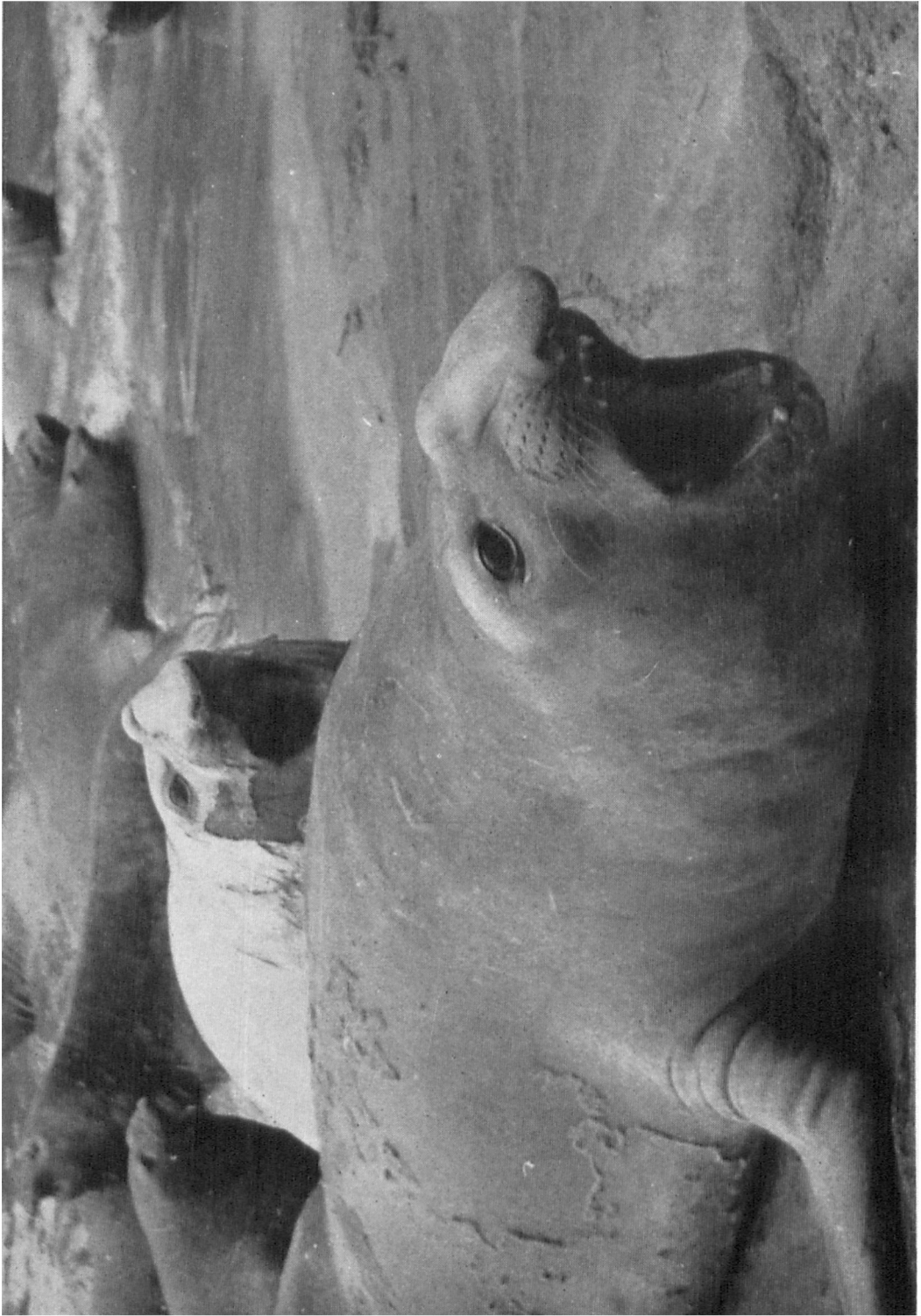
4. The South African Government should be reminded of the need to avoid the introduction of alien species. The importation of domestic animals should be subject to strict regulations.

5. There should be heavy penalties for either the capture or slaughter of protected species or the wilful or negligent introduction of aliens.

6. The appointment of a warden should be considered. No man is likely to be prepared to live alone on Gough if the weather station closes down, and the cost of maintaining him there might well be prohibitive. Such a warden would probably have to live on Tristan, and rely on the aid of the Company's ships in order to visit Gough. There seems little point in appointing a man merely as a "watchdog"; much the best thing would be to send a young, qualified scientist out to Tristan for a two- or three-



EXPEDITION BASE CAMP, GOUGH ISLAND



MOULTING BULL SEA-ELEPHANTS, GOUGH ISLAND



ROCKHOPPER PENGUINS, GOUGH ISLAND



THE GOUGH ISLAND MOORHEN (*PORPHYRIORNIS C. COMERI*)

year tour of duty during which he could undertake some ecological research. He would also be responsible for advising on the management of the natural resources of the islands, especially seals and crawfish. Such an appointment might be the best way of combining the protection of the island fauna with the derivation of useful knowledge. It is quite possible that funds might be made available for the sending out of additional staff from time to time, and a small and inexpensive Sub-Antarctic Research Station might even develop. The opportunities for pioneering in this field are very great.

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The above article was presented and discussed at the Central and South African Conference of the International Committee for Bird Preservation, Bulawayo, Southern Rhodesia, July, 1957.

Note by Dr. G. J. Broekhuysen. Committee member of the South African Section of the International Committee for Bird Preservation.

In 1948 a South African Expedition visited the Tristan group of islands. The Expedition spent about one month on and around the islands mainly exploring the possibilities for the establishment of a craw-fish industry.

As a member of that Expedition I visited all four islands, including Gough Island. It is, therefore, with great interest that I read Dr. Holdgate's report on the importance of making Gough Island a sanctuary.

I whole-heartedly support the suggestions put forward, but would like to mention that the Cape Province is completely closed to the import of any bird, but no action can be taken in the case of birds in transit. Birds collected outside the Union can be landed in Cape Town, as long as they continue their voyage by sea or air. The 30 specimens of the flightless moorhen come into this category and, in my opinion, permits should not have been granted to take so many.

I think that Inaccessible Island at least should be made a complete sanctuary, for it is the only home of the flightless rail, *Atlantisia rogersi*.

The following resolution was passed at the Bulawayo meeting of the International Committee for Bird Preservation :—

The 10th International Conference of the International Committee for Bird Preservation :

Having considered the need for the better protection of island species with special reference to the islands of the Tristan da Cunha Group,

having borne in mind the vulnerability, not only of species endemic to such islands, but also of species which, although they may have enormous total populations, yet congregate very locally for breeding,

resolves that

- (1) the attention of the appropriate governments shall be called to the urgent necessity for the strict enforcement of the conservation laws on all islands of the Tristan da Cunha Group, especially Gough Island and Inaccessible Island ;
- (2) the South African Government, which has established a weather station on Gough Island in connection with the International Geophysical year, be asked rigorously to control the introduction of alien animals, for example sheep, goats, cats and rats. Breeding of such animals is especially undesirable, for, if they were to obtain a foothold on Gough Island, there is grave danger not only that the indigenous birds themselves would be destroyed, but that their habitat would be ruined by overgrazing and consequent erosion.