SUMMER SEABIRDS BETWEEN NEW ZEALAND AND McMURDO SOUND

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INTRODUCTION

On 8/1/68, the first of two tourist expeditions to Antarctica left Lyttelton in the m.s. *Magga Dan*. In the two months at sea, the ship made the following four traverses between New Zealand and McMurdo Base:

Traverse 1: 8 - 21 January 1968: Lyttelton - Chatham Is. - Bounty Is. - Ross Sea - McMurdo Base.

Traverse 2: 25 January - 4 February: McMurdo Base - Ross Sea - Campbell Is. - Bluff (N.Z.).

Traverse 3: 6 - 18 February: Bluff - Auckland Is. - Campbell Is. - Ross Sea - Cape Hallett - McMurdo Base.

Traverse 4: 21 February - 3 March: McMurdo Base - Ross Sea - Balleny Is. - Macquarie Is. - Bluff.

Landings were made on the main Chatham Island at Waitangi; the Bounty Islands; Campbell Island; Enderby Island in the Auckland Island group; and Macquarie Island; in the subantarctic — and, at Cape Hallett; Cape Royds; Cape Evans; and McMurdo Base; in the Antarctic. An unsuccessful attempt was made to land on the Balleny Islands, but the *Magga Dan* sailed sufficiently close inshore along the western coasts of Sturge and Buckle Islands to observe large numbers of birds.

During daylight hours, the writer kept as continuous a bird-watch as possible, and recorded sea and air temperatures and weather conditions. Table 2 is the abbreviated log.

SEABIRDS AND THEIR DISTRIBUTION

Most birds seen at sea were petrels. Throughout the four traverses of the Southern Ocean and the Ross Sea during the late austral summer of 1968, these were the only species seen far from land or ice, or to follow the ship. Penguins are much less obvious in the water and they must have been overlooked at times; they were sighted on or near the subantarctic islands, the Antarctic continent, and in pack-ice not far from land.

Neither the Southern or Antarctic Skuas were seen any distance from land, except for the unexpected occurrence of the subantarctic Southern Skua in the pack-ice. Red-billed and Black-backed Gulls and shags were not seen far from land.

Only one Arctic Tern was sighted, and this was over pack-ice on traverse 1. The Antarctic Tern was seen about its breeding islands: Bounties, Campbell, and Aucklands; and in the open ocean south of Campbell Island on traverese 2, and to the north of Scott Island on traverse 1.

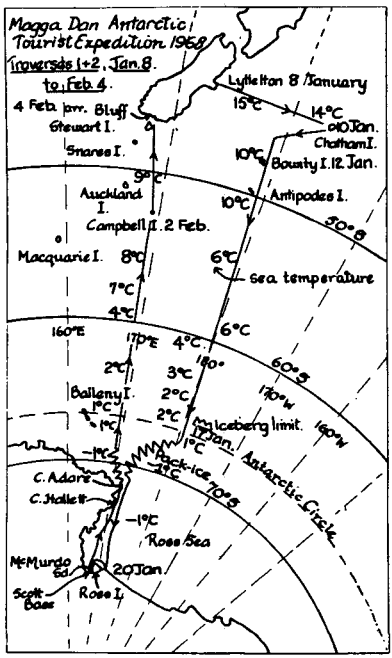


FIGURE 1

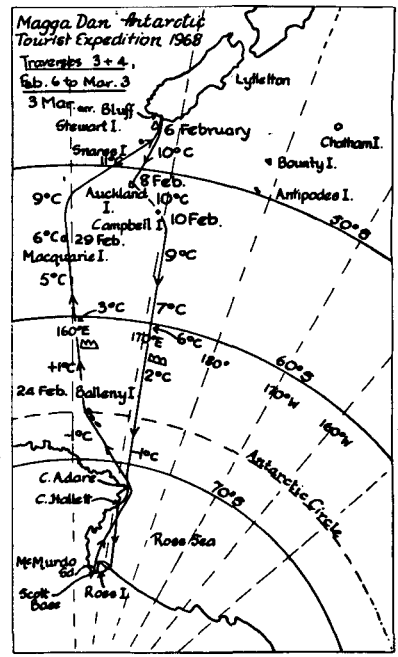


FIGURE 2

LATITUDINAL DISTRIBUTION OF THE MAIN FLYING SEABIRDS

Figures 1 and 2 trace the four traverses made by the *Magga Dan* between January and March 1968; the approximate surface sea and air temperatures; the position of the pack-ice and northernmost limits of icebergs. Figures 3 - 13 show the observed distribution of 12 of the main flying seabirds. The figures are arranged in an approximate order of their southward range, except that the Antarctic Skua and Southern Skua are combined on the one figure.

Basically, one recognizes two groups of birds (see also: Falla, 1937, and Dell, 1960) — those ranging the Southern Ocean and breeding on subantarctic islands, and those which breed in Antarctica. Their latitudinal distribution at sea is meaningless unless related to other factors intrinsic to the bird's life cycle. As Falla (1937) pointed out: the results of the s.y. "*Discovery*" 1929 - 30, 1931 and 1932 bird logs showed that indiscriminate wandering of birds is exceptional; the range of oceanic birds in any season is determined by the position of suitable islands for breeding and the seasonal movements of macroplankton on which they feed; and that the birds seen at any particular time is related to their breeding times. Many birds seen far from land during the breeding season are non-breeding or immature individuals.

Where the Antarctic convergence or the ice-edge in some way influences the distribution of a species, the latitudinal limits of that species will vary around the circumference of the Antarctic. The Antarctic land-mass extends different distances north, and, as the early R.R.S. *"Discovery"* expeditions showed, the position of the ice-edge and the convergence varies both seasonally and in different sectors of Antarctica (Mackintosh and Herdman, 1940). In the region to the north of the Ross Sea, the Antarctic convergence is well to the south of its mean latitude (Hart, 1942), and the edge of the floating ice is farthest south in February and March (Hardy, 1967). Consequently, both physical and biological factors must be considered in determining the distribution of various species.

WANDERING ALBATROSS *Diomedea exulans*

Diomedea exulans exulans is recorded to breed on Auckland Islands, Campbell Island and Antipodes Island in the New Zealand region; and *D. e. chionoptera,* the snowy form, on Macquarie Island.

Most birds sighted were mottled and some had very dark plumage. On traverse 1, when the ship passed close to Antipodes Island, the majority of Wandering Albatrosses were black, with a white face and white strip under the wings — corresponding to plumage types A and B, "young" birds described by Gibson (1967). In the region of Macquarie Island, the mature white, presumably snowy, form was predominant. All other adult Wandering Albatrosses had at least some trace of dark feathering on top of the head, or the sides of the thorax.

In immature birds, Gibson describes a temporary regression in the development of the white head and neck pattern to an earlier, darker condition where a conspicuous dark crown develops. Some birds sighted on the present expeditions had a dark crown, but this extended as a chin-strap down either side of the neck — in birds otherwise corresponding to plumage types D and E of Gibson.

(From her limited experience of Wandering and Royal Albatrosses throughout the four traverses, the writer wonders whether there is a significant difference in the shape of the head which could prove to be a useful field character — that of the Wandering Albatross appearing smaller in comparison to the size of the body, and more angular than that of the Royal Albatross.)

The latitudinal distribution of *D. exulans* showed that it was confined north of the Antarctic circle in this particular region to the south of New Zealand. It was seen furthest south on traverse 2 at 66°21′S; at 65°19′S on traverse 1; 61°19′S on traverse 3 and 61°07′S on traverse 4. Dell (1960) found " somewhat variable limits " to its southern distribution, based on logs kept on two traverses between New Zealand and McMurdo in the summer of 1957-58, and two traverses made in the summer of 1958-59. However, his results, too, showed that the southern limit of the Wandering Albatross was around 66°S, though it sometimes dropped out several degrees further north.

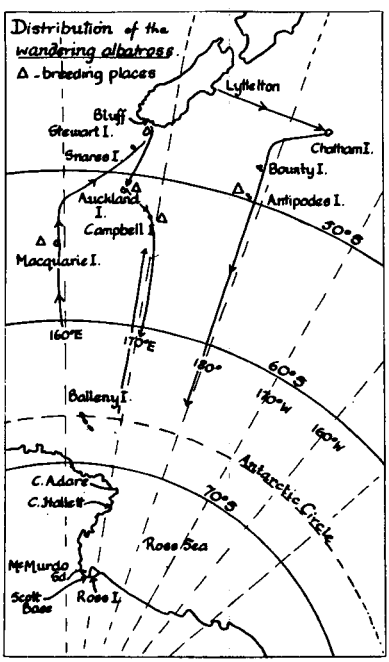
A comparison of the southernmost sightings made by Falla (1937), and Dell (1960), with those of the present series, suggests that the Wandering Albatross rarely reaches within 50 - 60 miles of the floating pack-ice (Table 1).

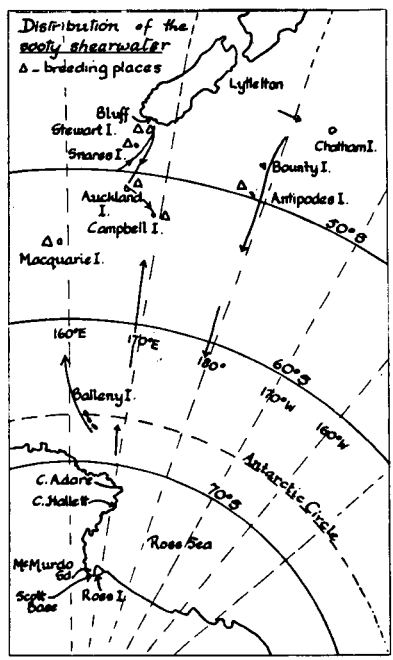
TABLE 1

Comparison of the Southern Limits of *D. exulans* with the Mean Positions of the Ice-edge in Different Months and Longitudes

	Date	Southernmost Sighting	Air Temp.	Sea Temp.	Proximity of Ice-edge
Falla:	1. 7 Dec. 1929	58°S, 77°E	32°F	31°F	Nov. - 59°S; Dec. - 61°S — Mackintosh and Herdman (1940)
	2.29 Jan. 1930	66°S, 55°E	33°F	33°F	Jan. - 66°S; Feb. - 66°30'S — " "
	3.30 Nov. 1930	52°S, 156°E	-	-	Nov. - 62°30'S; Dec. - 63°S — " "
	4.23 Feb. 1931	62°S, 69°E	34°F	34°F	Feb. - 66°S; Mar. - 66°30'S — " "
Dell:	1.27 Dec. 1958	65°49'S, 179°22'E	-	-	Around 69°S — Dell (1960)
	2. 8 Feb. 1959	66°53'S, 173°10'E	-	-	?Close into Antarctic continent about 70°S
Darby:	1.17 Jan. 1968	65°19'S, 179°36'E	37°F(34°)	36°F(31°)	Around 67° - 67°30'S
	2.29 Jan. 1968	66°21'S, 168°50'E	37°F(32°)	34°F(31°)	68°50'S
	3.13 Feb. 1968	61°19'S, 170°38'E	39°F(36°)	43°F(36°)	Around continent, about 70°S
	4.26 Feb. 1968	61°07'S, 159°52'E	36°F(34°)	37°F(34°) (*)	" " " " " — Darby log (1968)

(*) — Temperatures in parenthesis are those recorced one day south (average 1° - 2°S) of the southernmost sighting.





SOOTY SHEARWATER *Puffins griseus*

Sooty shearwaters ranged the Southern Ocean from New Zealand to 68°22'S — just north of the pack-ice.

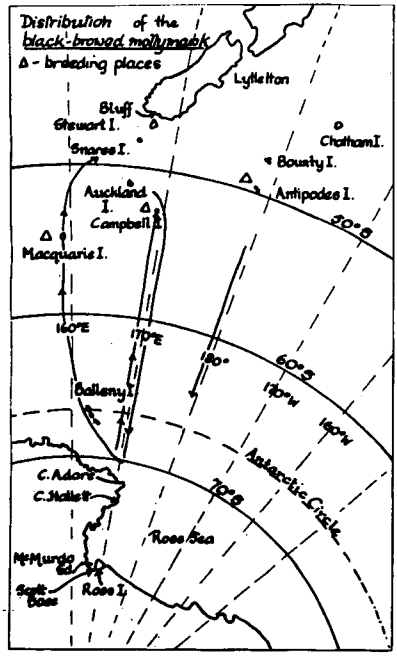
Their distribution was patchy, with concentrations about all of their subantarctic breeding islands — except for Macquarie; also about the convergence, and in iceberg seas. (Gillham (1967) has reported the Sooty Shearwater to be scarce on Macquarie). They were never seen to follow the ship, and usually flew some distance from it. Sometimes solitary birds were recorded, but at other times

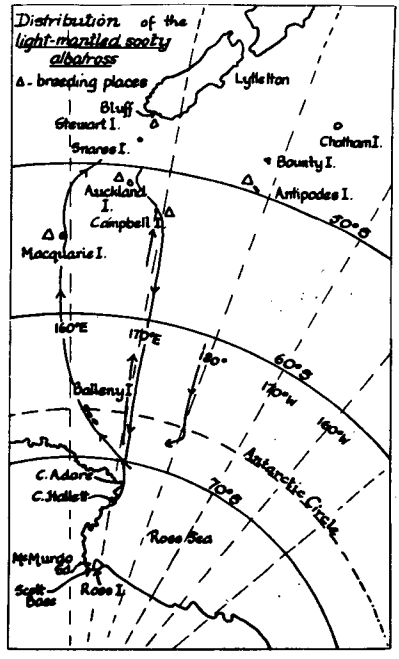
small to large groups flew past, or were seen feeding at the water surface. On 16 January (traverse 1), 200 to 300 birds appeared in the foggy twilight about the position of the Antarctic convergence, apparently feeding. On traverse 4, in iceberg seas about the Balleny Islands a group of about 150 birds appeared at 0900 hr., another of 200 birds at 1410 hr., and a third at 1500 hr., of some 80 birds. The next day, north-west of the Ballenys, and still in iceberg seas, only the occasional bird was seen.

The Sooty Shearwater breeds in south temperate zones and migrates to the northern hemisphere. From the observations made on the four traverses, it appeared that there were concentrations of *breeding* birds feeding in the vicinity of their breeding islands and *non-breeding* birds which had migrated further south to feed in areas of rich plankton south of the convergence.

BLACK-BROWED MOLLYMAWK *Diomedea melanophris*

Although there are numerous records of the Black-browed Mollymawk in New Zealand coastal waters (Falla et al., 1966; Norris, 1965), it was not seen to the north of its northernmost breeding island, the Antipodes. Its southern limit was immediately to the north of the ice-edge, in iceberg seas. This agrees with the findings of Falla (1937) and Dell (1960). However, while Dell's observations did not indicate any southward extension in the range of this species late in summer, those of the *Magga Dan* traverses do. On traverses 1 and 2, when the ice-edge was 67° and 68°50'S respectively, the southern limits of this mollymawk were 65°19'S and 68°22'S; while on traverses 3 and 4, when the ice-edge was close to the Anarctic continent about 70°S, the limits were 69°02'S and 70°01'S.





It was usually a solitary bird, sometimes following the ship for hours. Sometimes a few birds would appear about the ship and the most seen at any one time were groups of 5 to 7 individuals, once south of Campbell Island, and on several occasions about Balleny Islands and Macquarie Island.

LIGHT-MANTLED SOOTY ALBATROSS *Phoebetria palpebrata*

While both the Black-browed Mollymawk and the Light-mantled Sooty Albatross range widely over the Southern Ocean, the Light-mantled Sooty is not so common to the north of its breeding islands. However it is more common than the Black-browed to the south of the Antarctic circle. (Figure 5).

Falla (1937) considered that its southern limit seemed to be determined only by the coastline of Antarctica or heavy pack-ice, and the present observations support this. Dell (1960) suggests that the species tends to range further south in late summer; (his December limits being 60° - 68°S and those in February, 70° - 72°S). The southern limits observed on the *Magga Dan* traverses show the same trend, indicating that the dispersal of the heaviest floating pack allows the species to find suitable food in open water much further south. Thus, on traverse 1, the last *palpebrata* was seen about 67°55'S immediately to the north of the pack-ice; on traverse 2 the southern limit was about 68°22'S again on the margin of the pack-ice; on traverse 3, when the floating pack had dispersed, the limit was around 72°S off the coast between Cape Adare and Cape Hallett; and on traverse 4 several were recorded about 70°S.

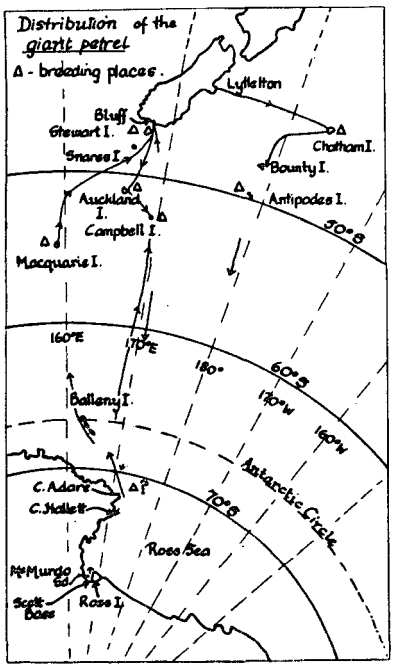
As with the Black-browed Mollymawk, Light-mantled Sooties were usually solitary or in a group of a few individuals. The most seen at any one time was 11, south of Sturge Island in the Balleny group. Birds with paler mantles were noticeable at high latitudes.

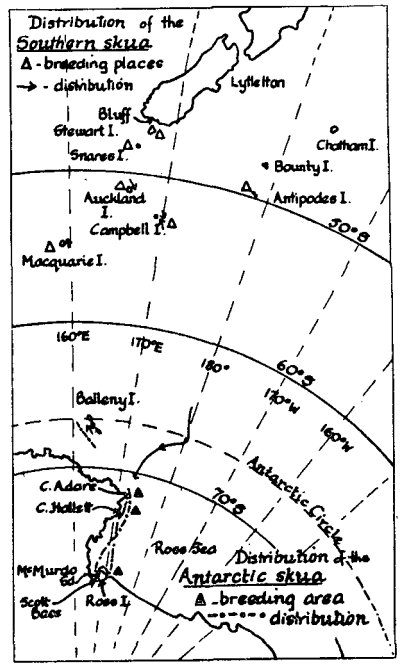
GIANT PETREL *Macronectes giganteus*

On all traverses, the Giant Petrel showed a patchy distribution between Lyttelton and McMurdo Sound. It was commonest about its breeding islands — Chathams, Antipodes, Stewart, Snares, Auckland, Campbell and Macquarie. In the open sea, it was usually solitary but sometimes two, three or four birds were seen at one time.

Murphy (1936) lists the Giant Petrel as breeding on the Antarctic continent at Cape Adare, but Reid (1962) found no evidence of this at Adare itself. However, during 1961, Reid noted as many as 115 birds at one locality in the area and suggests that they may breed somewhere in Robertson Bay (pers. comm). The Giant Petrel extended further south than any of the other, predominantly sub-antarctic species, so far considered. On traverse 4, one bird was noted at 77°45'S flying over loose sea ice, and Giant Petrels have been seen several times off Cape Bird on the northern tip of Ross Island during the past two summers (J. T. Darby, pers. comm.).

All birds north of 52°S had totally dark plumage or dark with pale faces or crowns. White and dark birds were equally common around Macquarie Island. South of Macquarie Island, white-faced, white-headed and white-mottled birds were commonest, but dark birds were also sighted. Many had unusually bright chrome yellow bills. Other than at Macquarie Island, pure white birds (with a few black rump feathers) were only occasionally recorded.





SOUTHERN SKUA *Catharacta lonnbergi*

The Southern Skua was common about its breeding islands — Aucklands, Campbell and Macquarie — and almost confined to them. Dell (1960) recorded one skua at 58°S, well south of Campbell Island and south of its southernmost known breeding island, Macquarie; and on the *Magga Dan* traverses, the Southern Skua was recorded on three consecutive days to the north of, and amongst pack-ice, and at the Balleny Islands.

On traverse 1, the first sighting of several Southern Skuas in the open sea was at 64°24′S. Around 65°45′S, some 50 rose from the surface of the sea in front of the ship. Two birds were seen off Scott Island at 67°24′S, not far from the northern edge of the pack-ice. Several solitary skuas were seen flying over floes in the pack-ice. None were seen in the pack on traverse 2. On traverse 4, two Southern Skuas were seen off Sabrina Islet in the Balleny group — where Kinsky (1964) has also recorded this species.

ANTARCTIC SKUA *Catharacta maccormicki*

This species was almost always seen close to land and its Antarctic breeding areas. Two were seen in the pack-ice on traverse 1 at 70°32′S, and a solitary bird in the Ross Sea at 74°03′S. They were then not seen until reaching Ross Island and McMurdo Sound where they were common. A few birds were seen on traverse 2 off the coast of Victoria land. On traverse 3 they were not observed until the ship neared the coast at Cape Adare. A single bird was seen off Sabrina Islet in the Balleny group on traverse 4 at the same time as two Southern Skuas were recorded.

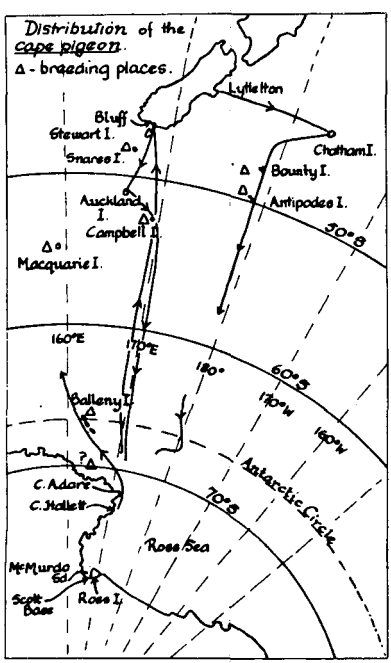
CAPE PIGEON *Daption capensis*

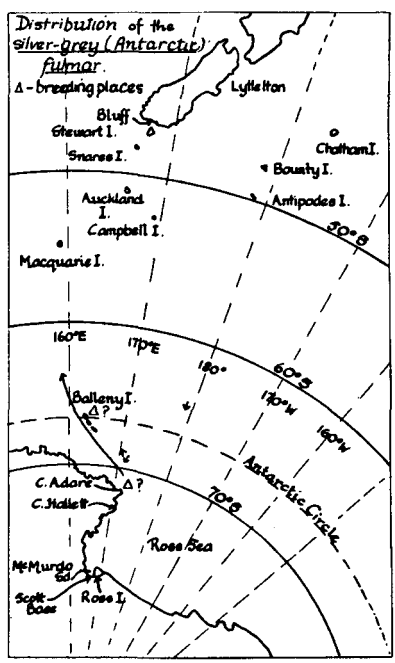
The Cape Pigeon was a most consistent 'wake-follower' from New Zealand to the pack-ice. They were most common at sea in the vicinity of Snares, Auckland and Campbell Islands in the sub-antarctic and in iceberg seas around 65°S.

On traverse 1, two to four birds were recorded each day between Lyttelton, Chathams and the Bounty Islands. To the SW of Antipodes Island, a group of some 100 birds was sighted. Thence to the northern ice-edge, a few birds were seen each day. On traverse 2, the northern ice-edge again formed the southern boundary for the Cape Pigeon, which was then recorded in small numbers each day until Bluff.

On traverse 3, when the floating pack had dispersed, small groups of Cape Pigeons were common in iceberg seas south of the Antarctic circle. Here they fed, particularly about the water-interface of bergs, and were last seen at 69°02'S just to the north of C. Adare. On traverse 4, their southern limit was about the same place, and on this voyage, they were also sighted abundantly about the Balleny Islands. Most birds in the vicinity of the Balleny Islands were pale mantled, with paler colouring on top of their wings. Birds with pale plumage, collected by Falla (1937), were considered by him to be adult breeding birds. Kinsky (1964) has reported the Cape Pigeon to breed on the Ballenys.

To the north of the Balleny Islands, Cape Pigeons were scarce; the last were seen at 64°20'S. None were seen about Macquarie Island, where Gillham (1967) described a few "eking out a precarious existence as breeders," on offshore Anchor, and Gorilla Head, Rocks.





Dell (1960) suggested that there may be two feeding populations of Cape Pigeons between New Zealand and the Ross Sea, and the records of the *Magga Dan* traverses show a similar scarcity of birds in the middle latitudes between 55° - 61°S. This may simply be related to the absence of breeding islands in these latitudes; and concentrations of feeding birds in waters not distant from northern or southern islands where they are known to breed. The ice-edge does seem to form the southern limit to their distribution, and the dispersal of the ice in late summer allows the Cape Pigeon to extend its range further south.

ANTARCTIC FULMAR *Fulmarus glacialoides*

The Antarctic Fulmar was uncommon. Its northern limit at this time of year has been reported to be within 24 to 36 hours sailing from the northern ice-edge (Falla, 1937; Dell, 1960).

On traverse 1, one bird was seen at 65°19'S. On traverse 2, several small groups of these fulmars were observed to the north of the pack-ice at 68°19'S. On traverse 4, it appeared on one day (15 February) at 69°S. Most Fulmars were seen on traverse 4 en route to the Balleny Islands, when the southern limit was 70°01'S (171°03'E). (Dell (1960) has recorded Fulmars as far south as 73°S, and he mentions that occasional birds have been sighted close to McMurdo Sound.) Groups of up to 25 Fulmars were common about Balleny Islands. The greater proportion of these lacked the typical black tip to the wings and were presumably immature birds. Kinsky reported Fulmars about Sabrina Islet (in the Balleny group) in March 1964, but doubted whether they actually bred there. However the reconnaissance party from *Magga Dan* observed Fulmars roosting on cliff edges on Sabrina, and Falla (1937) has noted their abundance to the north of the Ballenys, reported when the whaling ship *Sir James Clark Ross*, passed close by en route west in the 1930-31 season. After the *'Ross'* left the vicinity of the Ballenys they found that the Fulmar was scarce until approaching its breeding grounds on King George Land. All things considered, it does seem likely that the Fulmar breeds somewhere on the Balleny Islands.

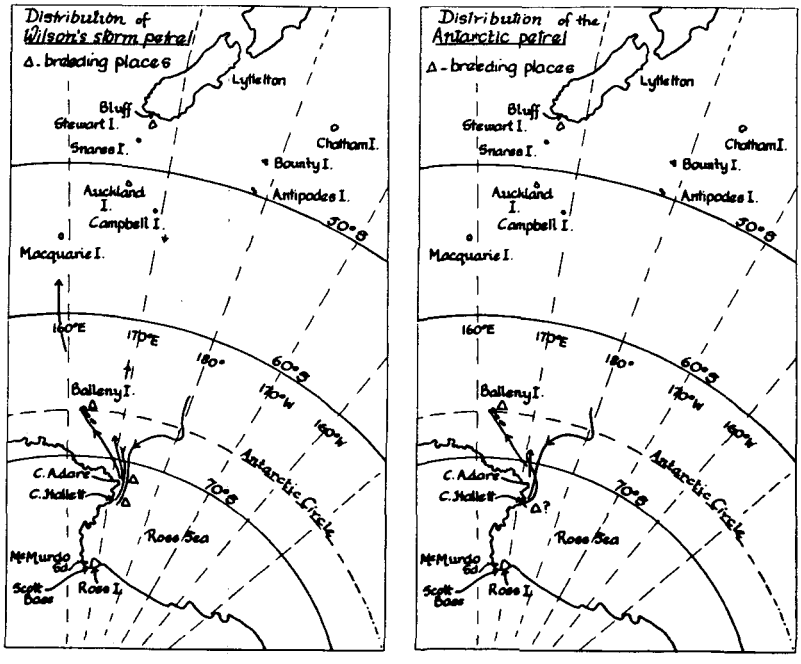
WILSON'S STORM PETREL *Oceanites oceanicus*

The sightings of Wilson's Storm-petrel — an Antarctic breeder which migrates far north in the autumn (Dorst, 1962) — were scattered. It was not abundant anywhere, but most common south of 63°S in iceberg or pack-ice seas, close to their Antarctic breeding places. Reid (pers. comm.) records their breeding at Cape Adare, C. Hallett, and, possibly, in the Tucker Glacier region; and they may breed on the Balleny Islands.

On traverse 1, a solitary bird was seen about 64°S, and a second on the northern fringe of the pack. It was not seen in heavy pack (where it would have been difficult for it to feed), but appeared again in the southern pack fringe where floes were more widely spaced and krill-stained. Solitary birds were seen south of the pack in the Ross Sea, the southernmost sighting being 74°03'S. On traverse 2, a solitary bird was seen over leads in the pack-ice off C. Hallett, and three birds to the north of the pack around 68°S. At 64°S, two Wilson's Petrels gathered about the ship to pick up rubbish which had been discharged.

On traverse 3, three birds were seen far to the north of their breeding grounds at 54°41′S, not far south of Campbell Island. Then, as before, they became more common to the south of the Antarctic circle: four sightings in iceberg seas at 69°02′S; three off C. Adare; two off C. Hallett; and one bird in flight over rough iceberg scattered seas at 73°38′S.

On traverse 4, occasional sightings of Wilson's Storm-petrel were made each day from 73°46′S to the Balleny Islands. Many were seen close to Sabrina Islet. To the north of the Balleny Islands, two birds were seen on separate occasions at 61°07′S (159°51′E), and two at 57°22′S (159°E) — south of Macquarie Island.



ANTARCTIC PETREL *Thalassoica antarctica*

The Antarctic Petrel was the characteristic species of the pack-ice, and in seas heavy with bergs. It was not recorded north of 65°19′S and was commonest between 67°S - 72°S, near reported or probable breeding sites. Rarely were solitary birds seen and small groups of five to 10 birds, medium groups of up to 50 birds, and large groups of up to several hundred birds were usual.

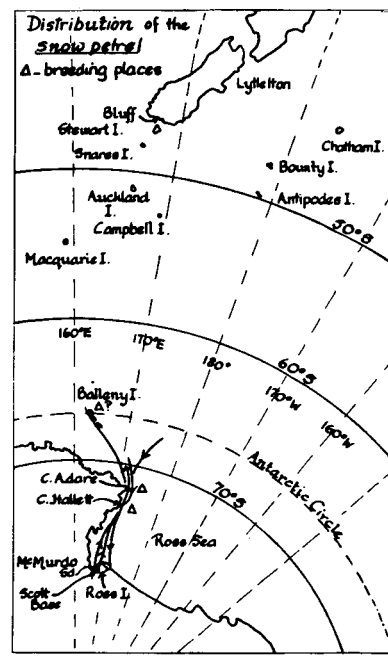
On traverse 1, the Antarctic Petrels were recorded throughout the 29 hours in the pack-ice. Some were feeding at the surface

of the water, some resting on larger, flat floes, but most in flight. Once clear of the pack, their numbers immediately dropped, except for a single large group which flew past the ship about five hours later. In the Ross Sea, as the ship circumnavigated a very large iceberg, thousands of Antarctic Petrels could be seen resting on the highest ice slopes and in wheeling flight over the berg. On traverse 2, Antarctic Petrels were seen off Cape Hallett, where they probably breed (Reid, pers.comm.), and until 68°22'S, over open water on the northern fringe of the pack ice. On traverse 3, their northern limit was further south at 69°02'S, near C. Adare. With the dispersal of much of the floating pack, they were not so abundant as earlier. On traverse 4, from Cape Adare to Balleny Islands they were consistently about the ship, and about Balleny Islands, the Antarctic Petrel was very common. Hundreds were seen at the water interface of bergs, and Falla (1937) has observed how this bird makes in the direction of an iceberg to collect in a flock under its lee where they appeared to find food. Off the Balleny coasts, groups of up to 10 birds flew about and past the ship in company with Cape Pigeons (which they rather resembled) in what was probably their subadult, non-breeding, plumage markedly pale mantles (see Falla, 1937; Orton 1968). Many Antarctic Petrels were observed on the ledges of Sabrina Islet by the reconnaissance party from *Magga Dan.*

SNOW PETREL *Pagodroma nivea*

Like the Antarctic Petrel, the Snow Petrel was a bird of the ice-pack and iceberg laden seas. It was observed furthest south of all the Antarctic flying birds, except McCormick's Skua. Dell (1960) records the northern limit of the Snow Petrel to be on the edge of the floating pack, and on traverses 1 and 2, this was true. On traverses 3 and 4, when the floating pack to the north of the Ross Sea had dispersed, the Snow Petrel was closer to its Antarctic continent breeding places, and about Balleny Islands where Kinsky (1964) has assumed that it breeds. Reid (pers. comm.) records their breeding on the steep (Ross Sea) slopes of Cape Adare, at C. Hallett, and, probably in the Tucker Glacier region.

On both expeditions Snow Petrels were seen in or near to McMurdo Sound, flying over loose sea ice. Rarely were they over open ice-free areas far from land. Unlike the Antarctic Petrel, they



were never in large groups. Most commonly they flew singly or in pairs. Small groups of four, five, and occasionally 10 to 15 were seen in the pack-ice and about the Balleny Islands where they sometimes fed at the surface of the water. Falla (1937) described the characteristic way in which Snow Petrels skimmed close to the water between and over the floes, then rose high in the air to gain elevation for the next glide. Sometimes they made shallow dives at the water, presumably to pick up surface krill.

DISCUSSION

While it is useful to consider these 12 species either as predominantly subantarctic or antarctic breeders, there is some overlap between the groups and interesting differences between species.

1. *Subantarctic Species:*

Sooty Shearwater and Southern Skua are species which both migrate south to breed in the subantarctic. In both, presumably non-breeding birds range far south to feed in plankton-rich waters south of the convergence.

Wandering Albatross, Black-browed Mollymawk and Light-mantled Sooty Albatross are typically southern ocean species. The Wandering Albatross ranges north to latitude 20°S (Alexander, 1955); the Black-browed to coastal New Zealand waters — in both species this is well to the north of their northernmost breeding localities. The Light-mantled Sooty Albatross is not often seen north of its breeding places, but it ranges further south than either of the other two species. The Wandering Albatross is rarely recorded as far south as the pack-ice in the New Zealand region, and usually disappears some 50 - 60 miles further north. The Black-browed Mollymawk and Light-mantled Sooty Albatross seem to be limited by the floating pack-ice earlier in the summer season, but when this has dispersed both species, more particularly the Light-mantled Sooty Albatross, extends several degrees further south into the Ross Sea.

Giant Petrel and Cape Pigeon have an extensive range in the southern ocean and though they breed predominantly on subantarctic islands, they probably also breed in restricted areas of the Antarctic continent or Antarctic islands in the vicinity of the Ross Sea. The Giant Petrel ranges far into the Ross Sea and the Cape Pigeon seems to extend further south when the pack-ice disperses. There may be two feeding populations of the Cape Pigeon related to northern and southern breeding places.

2. *Antarctic Species:*

The Antarctic Skua and Wilson's Storm-petrel migrate from northern localities (Dorst, 1962, and Falla et. al., 1966) to breed in the Antarctic in the austral summer. Wilson's Storm-petrel is reported to be a late egg-layer (Alexander 1955) — between December and February — and birds seem to travel out to sea to feed in iceberg and pack-ice areas; whereas the Antarctic Skua kept closer to land.

The Antarctic Fulmar, Antarctic Petrel and Snow Petrel are truly Antarctic species which breed and winter predominatnly in Antarctic regions. There is some evidence that the Fulmar moves north

in the austral winter, having been recorded several times off the coast of New Zealand (Falla, et. al., 1966). Similarly, of these three species, the Fulmar's summer range is furthest north into waters not far south of the Antarctic convergence. The dispersal of the pack-ice late in the summer may restrict the Antarctic Petrel and Snow Petrel to waters nearer the continent or their breeding islands.

Antarctic Penguins

Adelie Penguins were first sighted resting on flat ice-floes at 68°S, 175°20'E on traverse 1. Initially solitary birds, they became more numerous as the ship moved south through the pack, when groups of four and five birds were seen on floes, and a single group of 10 porpoised about in the water. Once south of the pack, penguins were not sighted until off Ross Island.

On traverse 2, small groups of Adelies on ice-floes were seen consistently between McMurdo Sound and close to the Victoria Land coast until just to the north of Cape Hallett. Their distribution on traverses 3 and 4 was almost identical. Adelies were numerous in the water about the Balleny Islands.

Few Emperor Penguins were sighted. None was evident in the vicinity of the breeding site at Cape Crozier where, in 1967 the early breakout of the sea ice resulted in the loss of chicks born in 1967. Two birds were seen on traverse 2 on an ice floe in moderately thick pack off the coast of Victoria land around 77°S, 165°E. Two were seen on traverse 4 on separate floes in heavy pack at 77°45'S, 164°48'E.

Birds of the Subantarctic Islands

Observations made on the short visits to these islands will not, in most instances, add much to previous knowledge. Sightings are included in Table 2. However, it is worthwhile to record that on the Bounty Islands a single Cape Pigeon was seen with its chick on a rocky ledge about 60 ft. above sea level.

Gannet Sighting:

On the evening of February 7, the *Magga Dan* sheltered in Carnley Harbour, where one Australian Gannet was sighted. G. Surrey (pers. comm.) mentioned two records of this bird at Campbell Island in November 1967 and January 1968.

Prions at Sea:

These were one of the commonest groups of species seen at sea. The writer was unable to identify the various species in flight: suffice it to say that they were observed on 24 of the 52 days actually at sea, and on 24 of the 38 days between New Zealand and their southernmost observed limit of 68°22'S on traverse 2 and 73°38'S on traverse 3. They usually appeared as solitary birds or in small groups, skimming low over the water, sometimes feeding at the surface. Their southern limit was in iceberg seas to the north of the pack-ice — except for a single sighting of two birds in the Ross Sea, south-east of Cape Hallett. As with Sooty Shearwaters and Antarctic Petrels, prions were frequently seen flying about the water interface of bergs apparently picking up food from the water.

TABLE 2: Summarised Bird and Weather Log From the 1968 Magga Dan Antarctic Tourist Expeditions

——→ between times indicates continuous watch
——→ between times indicates intermittent watches

TRAVERSE 1			
8 January 1968 Depart Lyttelton Slight sea, low swell; light SE wind; cloud over Banks Peninsula, clear out to sea.	1216 hr 1300 hr 1800 hr	Bar. 1015mb Air 18°C Sea 15°C	Red-billed and Black-backed Gulls and Spotted Shags in harbour. Last Black-backed Gull seen off Banks Peninsula. During afternoon:- 1 Buller's Shearwater; 1 White-headed Petrel; 1?Buller's Mollymawk; several Giant Petrels; few to 6 Cape Pigeons consistently; 3 Wandering Albatrosses and one group of 6-8 Fluttering Shearwaters.
9 January 1968 At Sea 43°35'S, 178°08'E Moderate sea and swell; mod. W wind; cloudy to overcast.	1100 hr 1200 hr 1400hr	Bar. 1020mb Air 15°C Sea 15°C	Few Cape Pigeons and Sooty Shearwaters. Buller's Shearwater Giant Petrel Buller's Mollymawk Wandering Albatross
10 January 1968 Off Port Hutt, Chathams Overcast; scattered rain; moderate to rough sea and heavy swell; moderate W wind. Proceeded to Waitangi, arr. 1430 hr. Dep. Waitangi for Bounty Island	1200 hr 2023 hr	Bar. 1008mb Air 15°C Sea 14°C	2 "young" Wandering Albatrosses; 1 Buller's Mollymawk on approach to Pt Hutt. Many Giant Petrels; Black-backed and Red-billed Gulls; White-fronted Terns and Pitt Island Shags off Pt Hutt, and Waitangi. Brief onshore visit; Waitangi to Owenga. Pied Oystercatchers on beach; Harrier; Goldfinch, Pipit, and Skylark about farmland; Weka wading midstream at *Te Awainanga*.
11 Janugry 1968 At Sea 45°09'S, 178°11'E Initially fine and clear, later becoming cloudy and overcast; slight sea; moderate swell; wind veering SW to light NW	1200 hr 1600 hr	Bar. 1016mb Air 16°C Sea 14°C	Wandering Albatrosses consistently about ship - max. 7 birds, some at dark "young" stage. Cape Pigeons - few birds all the time. Prion Giant Petrel Unidentified small grey ?shearwater at distance from ship.
12 January 1968 Towards Bounty Is. Slight to moderate sea and swell; moderate NW wind; overcast, some drizzle and reduced visibility. Anchored off Bounty Is. in 38 fm close to large islet 47°43'S, 179°5'E	0625 hr 0700 hr 1100 hr 1200 hr	Air 12°C Sea 10°C Bar. 1013mb	Approaching Bounty Islands there was an increase in bird life: several Wandering Albatrosses; Bounty Is. Mollymawks; Cape Pigeons; Sooty Shearwaters; prions; one Grey-backed Storm-petrel; Antarctic Terns; Red-billed Gulls; Bounty Island Shags; Giant Petrels; several groups of Erect-crested Penguins porpoising in water. (3 unidentified dolphins and many Fur Seals in water.) Ashore Bounty Is. 1130-1630hr. Erect-crested Penguins with late down stage chicks; Bounty Island (Salvin's) Mollymawks with chicks; prion chicks; adult prions in flight; Cape Pigeon, one breeding adult and chick; Bounty Island Shag; Antarctic Terns. Numerous Fur Seals and pups on most rocky platforms.
Anchors aweigh Course set for Scott Island.	1655 hr 1730 hr		

13 January 1968 At Sea (Passed off Antipodes at 0500 hr). Fog; drizzle and rain; low to moderate swell and slight to moderate sea; mod. NW wind.	1045 hr		Wandering Albatrosses - 15-20 dark "young" birds and one with mottled head and back. Cape Pigeons - 100 or so about ship Grey Petrel Sooty Shearwaters
50°54'S, 178°57'E	1200 hr	Bar. 986mb Air 12°C Sea 10°C	
	1300 hr		
14 January 1968 At Sea Cloudy, fine and clear. Moderate sea and swell mod. W wind.	1035 hr		Adult and immature stages Wandering Albatrosses Grey-backed Storm-petrel White-headed Petrel Sooty Shearwaters - one group of six birds Prion Cape Pigeon
54°29'S, 179°12'E	1200 hr	Bar. 999.5mb Air 11°C Sea 6°C	Grey-headed Mollymawk Black-browed Mollymawk Giant Petrel
15 January 1968 At Sea 57°55'S, 179°27'E Overcast; light rain; mod. to rough sea; mod. to high swell; wind veering W to E and increasing to strong.	1200 hr	Bar. 992.6mb Air 10°C Sea 7°C	Black-browed Mollymawk "Young" Wandering Albatross White-headed Petrel Cape Pigeon Prions - several
58°48'S, 179°30'E	1800 hr	Sea 6°C	
16 January 1968 At Sea 60°24'S, 179°36'E Overcast; fog; rain and poor visibility (½ to 1 mile). Sea rough to moderate and high swell. E wind strong, becoming moderate.	0600 hr	Sea 5°C	Several Black-browed Mollymawks all day; small groups of prion feeding at water; single Light-mantled Sooty Albatross: Groups 50 and more Sooty Shearwaters in flight at distance from ship during day and around 2230 hr
61°43'S, 179°41'E	1200 hr	Bar. 964mb Air 6°C Sea 4°C	a group of about 250 birds feeding at the water-surface.
	1800 hr	Sea 4°C	
Twilight	2230 hr	Air 5°C Sea 3°C	
	2400 hr		
17 January 1968 At Sea	0235 hr		Prions; solitary Cape Pigeons; first sightings Wilson's Storm-petrel at 0250 hr; solitary L.m. Sooty.
	0400 hr		
64°24'S, 179°24'E	0600 hr	Air 2°C Sea 2°C	
			2 solitary Wilson's Storm-petrel; Black-browed Mollymawk; several Southern Skua in flight; L.m. Sooty; 2 prions; solitary Cape Pigeon.
65°19'S, 179°36'E Overcast; foggy; decreasing visibility; slight to moderate sea; mod. to low swell; light SE wind veering to ENE	1200 hr	Bar. 965.5mb Air 3°C Sea 2°C	
			First Ant. Fulmar sighted 1255 hr; prions - 2 to 5 birds; Southern Skua - group 50 birds; Blue Petrel; Black-browed Mollymawk
	1545 hr	Air 1°C Sea 1°C	
	1800 hr	Air 1°C Sea 1°C	
D.R. 66°15'S, 179°57'E Small ice blocks in water. First iceberg 1850 hr. Crossed Ant.circle 2033 hr. 24 hr daylight; twilight 2300 hr - 0100 hr	1830 hr		Black-browed Mollymawk in flight and on water; last sighting Wandering Albatross at 1953 hr; first sighting Ant. Petrel at 2058 hr; Antarctic Tern; Wilson's Storm-petrel; L.m. Sooty; prions.
	2359 hr		

18 January 1968 At Sea Off Scott Island Visibility ½ mile. Small blocks ice in water.	0000 hr 0027 hr 0350 hr 0730 hr		Prion; 2 Southern Skua; groups of up to 50 Ant. Petrels continuously passing ship and feeding at water surface; solitary Cape Pigeon; solitary, then 2, L.m. Sooty.
Entered 6/10 pack-ice at 0800 hr; slight sea; long low swell; mod. NE wind decreasing.	0830	Air 1°C Sea -1°C	(2 whales reported 0700 hr) 4 Wilson's Storm-petrels
67°55'S, 175°41'E Light snow and sleet.	1200 hr	Bar. 959.6mb Air 1°C Sea -1°C	Throughout afternoon increasingly numerous Ant. Petrels in small and large groups in flight and on floes; Southern Skua and Wilson's Storm-petrels regularly sighted; Snow Petrel first sighted at 1320 hr; first sighting at 1730 hr; first sighting of Arctic Tern at 1730 hr; first sighting of Adelie Penguins on ice-floe.
Ship beginning to ice up ~ 2200 hr.	2000 hr 2400 hr	Air -1°C Sea 0°C	(whales) 3 Crabeater Seals reported) Thick layer of diatoms at water-interface of ice-floes.
19 January 1968 At Sea 69°20'S, 173°10'E	0020 hr	Air -1°C Sea -1.3°C	Smaller numbers of Antarctic Petrels in the middle of "night" and early morning; by 0500 hr there was an increase and throughout morning, groups of up to 30 birds.
0300 hr - steady snow and thick pack-ice; 0545 hr open pack-ice; slight swell and increased bird numbers; 0610 hr - driving sleet, snow, sea chop; 0930 hr - heavier ice; 1130 hr - momentary sun.	0255 hr		Snow Petrels - solitary and small groups up to 6 birds amongst floes in flight. Southern Skua - solitary birds Wilson's Storm-petrels - solitary birds amongst floes.
70°32'S, 173°18'E Loose pack (2/10)	1200 hr	Bar. 993mb Air 0°C Sea 0°C	Adelie Penguins - initially solitary birds increasing to 4's and 5's on floes. Red krill stains on ice noticeable mid-morning. Newly moulted Crabeater Seal seen.
19 January 1968 At Sea (cont.)			
At 1300 hr pack-ice cleared. Overcast sky, light snow; good visibility; calm sea and light S wind.			Open sea 1300-2400 hr coincided with a marked decrease in bird life. No birds recorded 1400-1515 hr Wilson's Storm-petrel - 2 birds at 1840 hr Southern Skua - solitary bird Adelie Penguins - groups of around 10 birds porpoising in the water. Antarctic Petrels - one group of about 100 birds flew cross-ship at 1713 hr.
Open sea	1742 hr 2400 hr	Air -1°C Sea -1°C	Antarctic Skua - first sighting at 1845 and again at 2300 hr. (2 whales sighted)
20 January 1968 At Sea 71°40'S, 173°40'E Open sea; ship detoured to pass round very large iceberg at 0020 hr, in brilliant sunshine.	0020 hr	Air -1°C Sea -1°C	1000's of Antarctic Petrel resting on summit slopes and in flight above large berg.
74°03'S, 172°12'E Open sea; partly cloudy clearing to fine and clear; slight to calm sea; low to slight swell; no wind.	1200 hr 2400 hr	Bar. 987mb Air 0°C Sea 0°C	Few birds Antarctic Skua Wilson's Storm-petrel

21 January 1968 Ross Ice-shelf - McMurdo	0500 hr		
Approached ice-shelf around 0500 hr. Fine; clear; cloudless; calm sea; no wind.			Adelie Penguins and Antarctic Skuas off Ross Island. C. Crozier and Cape Bird. Weddell Seals in water
77°15'S, 167°43'E Off Ross Island coast between C.Crozier and C.Bird. Moderate to heavy ice 1400 hr - 1700 hr.	1200 hr	Bar. 986mb Air -3°C Sea -1°C	
Arrived Hut Point, McMurdo Sound at 2030 hr.	2030 hr		

END OF FIRST TRAVERSE

(22 January-24 January. Berthed at McMurdo Base; visited Scott Base and Weddell Seals nearby on ice shelf. Antarctic Skuas about McMurdo and Scott Base dumps. Weddell Seals and Killer Whales about McMurdo berth. Adelie Penguins on sea ice.)

TRAVERSE 2

25 January 1968 Departed McMurdo Base	0040 hr		Antarctic Skuas, few to about 10 birds in flight near land and about sea ice. Adelie Penguins on sea ice in water and on shore at C. Evans and C. Royds. Group 15 Antarctic Skuas in water off C. Royds. Solitary Emperor Penguin and Adelie Penguins on ice-floes around 1030 hr; occasional Antarctic Skuas in flight.
Calm sea; faint breeze; sunny; occasional snow.			
Anchored off Cape Evans.	0306 hr		
Anchored off Cape Royds.	0930 hr		
Entered pack-ice, increasing in density off coast of Victoria land (8/10; 9/10)	1030 hr		
77°17'S, 164°55'E	1200 hr	Air -2°C Sea -1°C	
	1500 hr		
Thick pack several miles off Beaufort Island lessening around 2340 hr	1900 hr		Solitary Snow-Petrels in flight Antarctic Skuas - solitary to groups of 6 in flight and resting on ice-floes. Adelie Penguins - occasional birds on ice-floes. Emperor Penguin - one on ice-floe at 2200 hr. (Weddell Seal on ice-floe)
	2400 hr		
25 January 1968 (cont.)			
26 January 1968 At Sea	0010 hr	Air -3°C Sea -1°C	Few Antarctic Skua in flight (Weddell Seal in water)
76°30'S, 168°55'E	0130 hr		
	0900 hr		Snow Petrels - group 10 birds in flight over loose ice. (Weddell Seal on ice-floe)
At 1000 hr in mod. dense pack-ice (6/10-9/10)			
74°28'S, 169°03'E	1200 hr	Bar. 989.3mb Air -3°C Sea 0°C	
Cloudy, overcast clearing to fine and clear; calm sea; light NW wind.	1800 hr		
	1930 hr		Snow Petrels - solitary to 4 birds about floes Adelie Penguins - small groups on floes Antarctic Skua - solitary birds in flight (2 whales sighted)
Off Coulman Is.			
73°20'S, 172°03'E	2200 hr	Air 0°C Sea 0°C	
27 January 1968 At Sea	0300 hr		2 Wilson's Storm-petrel
14 miles off C.Hallett in thick pack; unsuccessful attempt to reach Hallett. Overcast; snow; poor visibility; calm sea, no swell; faint S. wind.	0530 hr		
71°55'S, 172°15'E	1200 hr	Bar. 994.9 Air -2°C Sea 0°C	Antarctic Petrels - group of about 50 birds in flight 2 Giant Petrels Single group Adelie Penguins on floe
During afternoon the wind increased and snow blown steadily across ship.	2400 hr		Snow Petrels - continuously about the pack-ice until morning of 28th

28 January 1968 At Sea	0600 hr		1 Light-mantled Sooty.
Pack-ice 0000-0730 hr			
68°50'S, 170°17'E	0900 hr	Air 0°C Sea -1°C	Antarctic Fulmar - solitary and small groups (one group of 12) in flight
Overcast, foggy and reduced visibility. Slight sea, low swell; light NE wind.			Wilson's Storm-petrel - 1 2 L.m. Sooty most of morning Sooty Shearwaters - group 20 in flight 1 Giant Petrel 2 Antarctic Petrels at 1210 hr
68°22'S, 170°18'E	1200 hr	Bar. 998.1mb Air -2°C Sea -1°C	1 prion
	1240 hr		L.m. Sooty - 6 about ship
	1940 hr		Black-browed Mollymawk - 1
67°30'S, 169°12'E	2100 hr	Air +2°C Sea +1°C	Antarctic Fulmar - 1 Wilson's Storm-petrel - 2 at 1940 hr Antarctic Fulmar - solitary birds most of evening L.m. Sooty - solitary birds Prion - thoughout evening Cape Pigeon - 1 Sooty Shearwaters - few Grey-backed Storm-petrel - 2 sighting of solitary birds Grey-headed Mollymawk - 1
	2145 hr		
29 January 1968 At Sea	1000 hr		
66°21'S, 168°50'E	1200 hr	Bar. 984.6 Air 3°C Sea 1°C	Black-browed Mollymawks Wandering Albatross - mature plumage and "young" birds L.m. Sooty Giant Petrel - dark plumage Giant Petrel - white plumage at 1720 hr
Overcast; strong N wind; rough sea; heavy swell. Proceeding towards Campbell Is.	2030 hr		Cape Pigeon - solitary bird Prion
30 January 1968 At Sea	0900 hr	Air 3°C Sea 2°C	Wandering Albatrosses Black-browed Mollymawks Cape Pigeon
64°S, 168°45'E	1000 hr		Ship hove to at 1000 hr for an hour; rubbish discharged attracted birds: 6 Wandering Albatrosses; 1 Giant Petrel-dark with pale crown and face; 2 Wilson's Storm-petrels; 2 Cape Pigeons; few prions - noticeably small; ?P. crassirostris
Overcast changing later to fine and clear. Slight sea; low swell. Light wind veering to SSW			
63°56'S, 168°42'E	1200 hr	Bar. 990.1 Air 3°C Sea 2°C	Sooty Shearwater distant from ship
	1925		L.m. Sooty Wandering Albatross
	0600		
31 January 1968 At Sea			Black-browed Mollymawk
59°50'S, 169°03'E	1200 hr	Bar. 987.5 Air 6°C Sea 4°C	Prions Wandering Albatrosses Sooty Shearwater Giant Petrel
Overcast becoming fine later in the day. Slight sea; low swell. Light SSW-S wind.			Cape Pigeon
	1800hr	Air 6°C Sea 7°C	
1 February 1968 At Sea to South of Campbell Is.	0600hr		Wandering Albatrosses all day Sooty Shearwaters - few Black-browed Mollymawk
55°25'S, 168°55'E	1200hr	Bar. 986mb Air 8°C Sea 8°C	Giant Petrel Antarctic Tern - 1 A small Shearwater *
Overcast, cloudy sky becoming fine and clear in the afternoon. Calm sea changing to slight then moderate swell NW wind increasing			Cape Pigeon L.m. Sooty
	2000 hr.		

2 February 1968	Off Campbell Is.	0630 hr			
Steaming along E coast of Campbell awaiting rendevouz with N.Z. meteorological station personnel.				Approaching Campbell	Cape Pigeons - numerous Giant Petrels Black-browed Mollymawks L.m. Sooty Southern Skua Royal Albatrosses
Entered Perseverance Hb.		0815 hr			
Anchored		0850 hr		Harbour	Cape Pigeons Black-browed Mollymawks Antarctic Tern Campbell Island Shag Southern Skua Black-backed Gull
Perseverance Hb. 52°30'S, 169°8'E Cloudy, overcast during day; party climbed to St.Col to see nesting Royal albatrosses		1200 hr	Bar. 980.1mb Air 11°C Sea 8°C	Shore	Southern Skua about meteorological station Royal Albatrosses Silvereyes in Dracophyllum (Young bull Elephant Seals in moult on shore near station)
Anchor aweigh: Departed Harbour mouth. Open sea rough; moderate to high swell; moderate WSW veering W wind.		1945 hr 2000 hr			
3 February 1968	At Sea	0600hr			
49°45'S, 168°46'E Cloudy, clearing in afternoon. Slight sea; low swell; light SSW wind.		1200 hr 2000hr.	Bar. 996.8mb Air 13°C Sea 9°C		Cape Pigeons abundant all day
4 February 1968	Bluff				
Pilot boarded Line ashore		0600 hr 0700 hr.			Cape Pigeons Giant Petrels Black-backed Gulls Red-billed Gulls

(* Small, unidentified shearwater most closely resembling Puffinus assimilis)

END OF SECOND TRAVERSE

END OF FOURTH WEEK, END OF FIRST EXPEDITION

TRAVERSE 3

6 February 1968	Departure From Bluff	0150 hr	Air 11°C Sea 11°C	
Beginning of second expedition. Course set for Campbell Island		0218 hr		2 Giant Petrels Sooty Shearwaters - groups 15-20 birds Wandering Albatrosses - solitary and several birds (max. 6) Grey-backed Mollymawk Kingfisher came aboard 0930 hr (and disappeared late afternoon in heavy seas)
		0900		
47°48'S, 168°11'E Rough sea; heavy swell; ship rolling violently. Altered course to Auckland Islands		1200 hr	Bar. 992.5mb Air 14°C Sea 10°C	Wandering Albatrosses Cape Pigeons Giant Petrels Sooty Shearwaters (2 dolphins)
		1410 hr		
7 February 1968	At Sea	0615 hr		
Weather cloudy, fine and clear. Rough sea; heavy swell; ship rolling violently.		0900 hr		
50°08'S, 167°02'E		1200 hr	Bar. 990.8mb Air 11°C Sea 10°C	Royal Albatross Wandering Albatrosses Cape Pigeons Sooty Shearwaters Shy Mollymawk L.m. Sooty Giant Petrel ?White-chinned Petrel Prion White-faced Storm-petrel Diving Petrel
1700-30 Off Enderby Is. Rough seas prevented safe entrance to Pt.Ross; course altered to Carnley Harbour. Misty, windy NW.		1700 hr		Auckland Island Shag Giant Petrels Sooty Shearwaters Royal Albatrosses

7 February 1968 (cont.) Proceed along E coast of main Auckland Islands to Carnley Harbour. Anchored overnight.	1730 hr ↓ 2150 hr		L.m. Sooty Wandering Albatrosses Shy Mollymawk Diving Petrel Prions Sooty Shearwaters Australian Gannet (Carnley Harbour)
8 February 1968 Auckland Islands Proceeded to Enderby Is.	0230 hr 0545 hr 0730 hr 1000 hr		2 Grey-backed Storm-petrels flew on to bridge Penguins porpoising in water
Off Enderby Island Fine; warm; clear; sunny; very little wind.	1115 hr ↓ 1200 hr	Bar. 997.6mb	Cape Pigeons Giant Petrels Antarctic Terns Auckland Island Shag Red-billed Gulls Black-backed Gulls Southern Skuas Ashore Enderby = Auckland Island Shags on cliffs near beach. Southern Skuas and few Sea-lions on beach. On grassy slopes and sand-dunes to E of beach were a few harems of Sea-lions - males with about 14 females, and pups. Skuas about periphery of harems. Numerous Pipits from shore to top of island - noticeably pale plumage. Rabbits numerous on grass. Red-crowned Parakeet and Auckland Island Tomtits on fringes of rata forest. Few Yellow-eyed Penguins seen in scrub at forest edge.
8 February 1968 (cont.) Enderby Island			Ashore Bellbirds with almost fully fledged young in rata forest and scrub near the top of the island. Female Sea-lions with young numerous throughout rata. On top of island, two cattle seen. 4 Royal Albatrosses on nests - 2 examined - were banded and had eggs. One unidentified wader on peaty vegetation at top of island. (Field notebook lost on Enderby Is.)
Departed Enderby Island	1730 hr		
9 February 1968 At Sea Towards Campbell Is. Overcast; continuous light rain; reduced visibility; moderate sea and swell; mod-strong NE wind	1200 hr	Bar. 983.9mb Air 9°C Sea 10°C	Wandering Albatross ?Royal Albatross Prions Cape Pigeons Giant Petrels Sooty Shearwaters Black-browed Mollymawk L.m. Sooty
Off Campbell Island	1750 hr		Black-browed Mollymawk Royal Albatrosses Giant Petrels Cape Pigeons Sooty Shearwaters
Entrance to Perseverance Harbour			Giant Petrels Black-backed Gulls Red-billed Gulls Royal Albatrosses L.m. Sooty Albatrosses (2 Fur Seals in water)
In Harbour			Southern Skuas Cape Pigeons Antarctic Tern L.m. Sooty and Royal Albatrosses Black-backed Gulls
Anchored	1945 hr		

10 February 1968 Ashore Campbell Is.
52°30'S, 169°8'E
Walked from present Met. station, coastwise to Tucker Cove, then via old Met. station to St.Col Pk. From there to summit of Beeman Hill and back to Met. station. Almost continuous rain, sleet, and strong winds. Weighed anchor, departed Perseverance Harbour. Open sea - rough; heavy swell

1200 hr Bar. 992.2mb Air 9°C
2320 hr
2400 hr

(Male Elephant Seals in moult in Tucker Cove)
Silvereyes in Dracophyllum
Hedge-sparrow in flight over scrub
Royal Albatrosses with newly hatched chicks
L.m. Sooty chicks on Beeman Hill
Numerous Cape Pigeons

11 February 1968 At Sea
(Campbell Island - C.Hallett)
54°41'S, 169°35'E
Overcast; occasional rain; mod. rough sea; ship rolling in short, high swell.

0600 hr
1100 hr
1200 hr Bar. 987.5mb Air 9°C Sea 9°C
1700 hr

Black-browed Mollymawk - 6-8 about ship
Cape Pigeon
Wandering Albatross - solitary bird
Wilson's Storm-petrels - 3 birds
2 prions
L.m. Sooty Albatross

12 February 1968 At Sea
58°32'S, 170°14'E
Partly cloudy; occasional showers; slight sea and mod. swell. Light NxW wind.

0600
1200 Bar. 973.6mb Air 7°C Sea 7°C
1700 hr

Black-browed Mollymawk - solitary bird all day
Wandering Albatrosses - 1-2 immature
Sooty Shearwater - 1 bird at noon
Cape Pigeon - solitary bird all day
L.m. Sooty Albatross - 1
Giant Petrels - 4 in late afternoon
Prion - 1

13 February 1968 At Sea
61°19'S, 170°38'E
Complete cloud cover but clear; moderate to rough sea; moderate swell.

0600 hr
1200 hr Bar. 996.1mb Air 4°C Sea 6°C
1800 hr

Black-browed Mollymawks — Solitary birds throughout watch
Wandering Albatrosses
Cape Pigeons
L.m. Sooty
Sooty Shearwaters - small groups
Giant Petrel - occasional sighting of solitary birds
(Group 30 plus dolphins 6 - 7 ft long)

14 February 1968 At Sea
65°04'S, 171°00'E
Moderate sea and swell; reduced visibility; some snow; cloudy sky; mod. WNW wind. First iceberg sighted (63°32'S, 170°E at 0300 hr).

0600 hr
1200 hr Bar. 997.9mb Air 2°C Sea 2°C
1850 hr

Black-browed Mollymawks - 1's and 2's all day.
L.m. Sooty - all day 1-4 birds
Cape Pigeons - few all day, especially about berg at 1425 hr
Prions - a small group about an iceberg, feeding at water surface

15 February 1968 At Sea
69°02'S, 171°39'E
Cloudy sky; reduced visibility some snow; moderate WNW wind; moderate sea and swell; continuously passing icebergs. By 1645 hr sunny, clear, no snow.

0530 hr
1200 Bar. 981.1mb Air -2°C Sea -1°C
2400 hr

Antarctic Fulmar - first sighted 0530 hr increasing to group of 6 birds that day
Black-browed Mollymawks - solitary birds
Cape Pigeon - up to 5 birds during day
L.m. Sooty - 1-4 birds during day
Giant Petrels - 3 dark plumage birds at 0930 hr
Antarctic Petrels - up to 6 birds during day
Wilson's Storm-petrels - 4 at 1830 hr
Snow Petrels - 2-3 birds during afternoon and night

16 February 1968 At Sea Snow falling early in the morning; clear and sunny by 0900 hr off Cape Adare. Calm sea and swell; light changeable wind. Entered close (10/10) ice at 1030 hr.	0500 hr 1030 hr		L.m. Sooty Albatrosses and 3 *Wilson's Storm-petrels* Antarctic Skuas Snow Petrels - few Antarctic Petrels - few
12 miles NE C.Hallett	1200 hr	Bar. 990.2mb Air -3°C	Snow Petrels - ones and twos over the ice-floes Antarctic Skuas increasing in number near C. Hallett Adelie Penguin on ice-floe (Leopard Seal on flow at 1115 hr; Crabeater Seal at 1305 hr)
	1400 hr		
Anchored off C.Hallett	1510 hr		
	1800 hr		Sea thick with green diatoms-like jelly
Anchors aweigh, proceeding to C.Crozier. Mod. S wind; heavy ice, cleared 2250 hr.	2100 hr		Onshore: visited few Adelies, the main population having left for the sea. Antarctic Skuas. Weddell Seals on ice-floes. 2 Wilson's Storm-petrels and Antarctic Skuas over ice off Hallett.
	2250 hr		
17 February 1968 At Sea 73°38'S, 171°36'E Cloudy sky; fog; reduced visibility; moderate head sea; mod. swell; mod. strong S wind; some snow; occasional icebergs.	0600 hr 1200 hr	Bar. 988.1mb Air -3°C Sea -2°C	*Snow Petrel - occasional birds* throughout day Wilson's Storm-petrel - occasional birds throughout day 1 White-faced, mottled Giant Petrel 2 prions seen on a few occasions
	2400 hr		
18 February 1968 Ross Sea Off Ross Ice-shelf, near Ross Island Cloudy; cold; clear. Mod. SE wind. New sea ice forming off C.Royds and C.Evans	0600 hr 1200 hr	Bar. 988mb Air -9°C	(Several ?Sei Whales off Ross Ice-shelf; Weddell Seals in water near C. Crozier) Snow Petrels - few off Ice-shelf and around Ross Island; 3 at 2100 hr Antarctic Skuas - increasing frequency of mainly solitary birds about Ross Island and towards McMurdo Base.
Anchored off McMurdo Base	2245 hr		(Group of about 30 Killer Whales off Cape Bird at 1800 hr)
	2400 hr		

END OF THIRD TRAVERSE

(Berthed at McMurdo Base, 19-20 February: visited Scott Base. Two fine, cold days)

TRAVERSE 4

21 February 1968 Departed McMurdo Base for C.Evans and Cape Royds Snow; fog; increasing winds precluded landing at either place.	0710 hr		Few Antarctic Skua and Snow Petrels over open water
77°45'S, 164°48'E Rough sea; moderate swell; fog; intermittent snow and sleet; clearing later in afternoon to fine and clear; cloudy sky. Ice (7/10) from 2045-2300 hr.	1200 hr	Bar. 995.1mb Air -7°C	Ice-floes stained with red-brown krill Several Adelie Penguins on floes Emperor Penguins - 1 at 2240 hr, 1 at 2250 hr, both on floes Snow Petrels 1,2 and 3 birds in flight over floes Giant Petrel - 1 at 1730 hr
	2400 hr		

22 February 1968 Ross Sea	0600 hr 0800 hr		Giant Petrel - white; chrome yellow beak; few dark rump feathers Snow Petrel - 1 bird Antarctic Skua - 1 bird
73°46'S, 170°03'E Overcast; sleet; snow; SSW wind increasing from breeze to near gale; rough sea; long, mod. heavy swell; ship rolling heavily; reduced visibility. Entered ice at 1300 hr (9/10); off C.Wadworth 1420 hr	1200 hr 1500hr. 1800 hr 2400 hr	Bar. 984.8mb Air -4°C Sea -2°C	Snow Petrels 1 - 4 birds over ice Antarctic Skua - occasional solitary birds Adelie Penguin - group of 15 on ice-floe Wilson's Storm-petrel - 1 at 1440 hr Cape Pigeons - 1 at 1800 hr
23 February 1968 At Sea	0600 hr		Several L.m. Sooty Albatrosses all day Cape Pigeon
70°01'S, 171°03'E Mod. sea; mod. high swell; overcast; mod. S wind; icebergs continuously all day. Course altered at 2100 hr towards Balleny Islands	1200 hr 2400 hr	Bar. 987.6mb Air 0°C Sea -1°C	Antarctic Petrels - 100's around larger bergs Antarctic Fulmar Wilson's Storm-petrel - several all day Black-browed Mollymawk
24 February 1968 Approach to Balleny Icebergs all day. 0600 hr calm sea, slight swell, fine and clear, cloudy sky. 0840 hr Balleny Islands visible at 35 miles; 0900 hr, snow; 0945 hr Balleny Islands 18 miles distant - southern ice-cliffs of Sturge Island approached. At 1120 hr off western coast of Sturge Island, sunny, clear.	0600 hr 0940 hr		Antarctic Fulmars - increasing numbers: groups up to 6 birds Cape Pigeons - groups of 2 to 6 birds Antarctic Petrels - 2-10 esp. about bergs Wilson's Storm-petrels - 2 at 0600 hr L.m. Sooty Albatrosses - usually solitary; 11 at 0840 hr Sooty Shearwaters - first at 0750 hr then group 150 plus birds feeding at water surface
67°26'S, 164°25'E Fine and clear; slight sea; low swell; light N wind	1200 hr	Bar. 980mb Air -1°C Sea -1°C	Antarctic Fulmars - groups of up to 25 birds - many of which lack black wing tips Sooty Shearwaters - occasional birds Antarctic Petrels - small groups of birds about equally common as the Cape Pigeons and continuously about the ship Wilson's Storm-petrel 1 at 1145 hr
To west of Sturge Island			1200 hr: Adelie Penguin - group in water Snow Petrels - continuous sightings of solitary and groups of about 5,10 and 15 birds, increasing in number through to 1700 hr Giant Petrels - 2 birds, dark plumage and white faces Wilson's Storm-petrels - continuous sightings of 1-3 birds throughout afternoon Black-browed Mollymawks - few birds all afternoon Light-mantled Sooty Albatrosses - occasional birds Antarctic Petrels and Cape Pigeons - numerous and about equal numbers Antarctic Fulmars - small groups of 5-6 birds thoughout afternoon

24 February 1968 (cont.) At 1525 hr, between Sturge Island and Sabrina Islet, the sky clouded, fog advanced and visibility very much reduced; increased swell.			Sooty Shearwaters - few small (5) groups, then group 200 birds at 1416 hr, and 85 birds at 1500 hr
	1642 hr		
1700 hr - 1800 hr ship stopped while small party unsuccessfully attempted to land on Sabrina Islet; prevented by then heavy swell.	1700 hr		Antarctic Skua - 1 recorded at 1700 hr Southern Skua - 2 recorded at 1700 hr Black-browed Mollymawk - 1 Wilson's Storm-petrel - solitary birds Cape Pigeon - mainly solitary, but group of 200 birds at 1800 hr Sooty Shearwaters - occasional birds
Sabrina Islet - Buckle Is. coast. Darkness fell as nearing the tip of Buckle Is. and south of Young Is. Course altered to Macquarie Island			Giant Petrels - 2 sightings Snow Petrels - solitary to 10 birds between 1700 hr - 2000 hr *L.m. Sooty* - 1 Antarctic Fulmar - 1 Decreasing number of birds as ship left the coast of Balleny Islands
	2000 hr		
25 February 1968 At Sea Towards Macquarie Is. Light snow early in the morning.	0600 hr		L.m. Sooty Albatrosses - 4 feeding Antarctic Fulmar - 1 Cape Pigeons - 6 feeding Prion - 1 feeding Black-browed Mollymawks - 6-8 feeding Giant Petrels - occasional dark plumage birds Sooty Shearwaters - occasional birds
	0730 hr		
64°20'S, 161°00'E Continuously passing large icebergs. Mod. sea with heavy swell; ship rolling and pitching heavily; mod. SSW wind	1200 hr	Bar. 978mb Air 1°C Sea 1°C	
	2000 hr		
26 February 1968 At Sea	0600 hr		L.m. Sooty Albatrosses - 2-4 most of day
61°07'S, 159°52'E Fine, sunny day; clear sky; 'warm'; slight sea; slight to mod. swell. No appreciable wind.	1200 hr	Bar. 989mb Air 2°C Sea 3°C	Black-browed Mollymawks - 4-6 most of day Wandering Albatross - 1 Prions - 2 Wilson's Storm-petrel - 1 at 1100 hr; 1 at 1945 hr (So little wind that mollymawks unable to glide)
	2000 hr		
27 February 1968 At Sea Early in the morning sea was quiet, slight swell; snow began at 0800 hr.	0650 hr		L.m. Sooty Albatross flew past in half-darkness at 0650 hr Wandering Albatrosses - several, snowy form
57°22'S, 159°00'E Rough sea; high swell; ship rolling heavily from 2100 hr; strong NE wind.	1200 hr	Bar. 959.5mb Air 4°C Sea 5°C	Wilson's Storm-petrel - 2 Prions - several at water surface A small shearwater - 1° (Few birds early in morning, increasing thoughout day)
	2000 hr		
28 February 1968 At Sea	0600 hr		Wandering Albatrosses - 6 ? snowy form
55°17'S, 159°08'E Overcast; rough sea; high swell; reduced visibility; strong WNW wind increasing as Macquarie Island approached. Off sthn. end Macquarie at 1545 hr. *Off Buckles Bay* at 1900 hr. Sea calm in the lee of the island.	1200 hr	Bar. 975mb Air 5°C Sea 6°C	Unidentified storm-petrel Prions - 4 Grey-headed Mollymawk - 1 Giant Petrels - several very dark plumaged birds with chrome yellow beaks and one dark with white head and sev. white plumage birds off Macquarie Black-browed Mollymawks - several L.m. Sooty Albatrosses - several off Macquarie Is. (At 1800 hr we could see 100,000's penguins on shore colonies on E coast of Macquarie Island)
	2000 hr		

29 February 1968 Macquarie Island:		On shore as guests of ANARE personnel	
Tour parties visited the ANARE station; Nuggets and to Wireless Hill. Warm overcast day.			Shore Stewart Island Wekas - foraging amongst kelp on beach
54°37'S. 158°54'E.			Several Southern Skuas - along beach and about penguins
			Giant Petrels - white and dark plumage in flight off coast
			Wandering Albatrosses - in flight
			L.m. Sooty Albatrosses - in flight
			Gentoo Penguins - small groups along beach
(Elephant seals; bulls and cows in moult along beach - both adults and subadults)			King Penguins - small groups 8-12 birds along beach and sev. hundred at Nuggets
			Royal Penguins - several hundred on beach at Nuggets: in late stages of moult
			Rockhopper Penguins - a few amongst rocks on Wireless Hill
Anchors aweigh	1800 hr		
1 March 1968 At Sea Towards Bluff	0600 hr		Wandering Albatrosses - mainly immature: dark brown across dorsal wing surface, dark crown and 'chin' strap - about stage "C" of Gibson (1967)
			Black-browed Mollymawk - 1
			Giant Petrel - 1 to 3 birds: 1 dark; 1 white-faced
52°10'S, 161°58'E	1200 hr	Bar. 1008.1mb	Prions - several throughout day
Sunny, fine and clear; mod. sea and swell; light SW wind.		Air 10°C Sea 9°C	Light-mantled Sooty Albatrosses - 2 sightings
	2000 hr		
2 March 1968 At Sea	0600 hr		?Royal Albatrosses - 2
			Giant Petrels - several dark plumage
49°26'S, 165°43'E	1200 hr	Bar. 1013.9mb	Sooty Shearwaters - several
Fine, becoming cloudy with rain; N wind increasing to strong; rough sea, moderate swell.		Air 12°C Sea 11°C	Prions - several
			Black-browed Mollymawk - 1
			L.m. Sooty - 1
	2000 hr		
3 March 1968 Stewart Is. to Bluff	0600 hr		Sooty Shearwaters - abundant and in groups about 30 in number
Early in morning, weather overcast, rain; slight sea and swell; mod. strong WSW wind; improved later. Off Stewart Is. at noon. Awaiting pilot, Bluff 1400 hr. 1620 hr proceeding to Bluff. 1715 hr berthed.			Wandering Albatross - immature (as seen on March 1)
			Buller's Mollymawk - 1
			Giant Petrel - several
			Pied Shag)
	1200 hr	Bar. 1017.0mb	Red-billed gull) off Bluff
		Air 16°C Sea 12°C	Black-backed gull)
	1700 hr		

END OF FOURTH TRAVERSE

END OF SECOND EXPEDITION

* Small unidentified shearwater, most closely resembling *Puffinus assimilis*

TABLE 3: Summary of the Observed Distribution of the Flying Seabirds

Species	Traverse	Northernmost Sighting		Southernmost Sighting	
		Date	Position	Date	Position
Wandering Albatross	1.	8 Jan. 1968	Off Banks Pen.	17 Jan. 1968	65°19'S, 179°36'E
	2.	1 Feb. 1968	55°25'S, 168°55'E	29 Jan. 1968	66°21'S, 168°50'E
	3.	6 Feb. 1968	47°48'S, 168°11'E	13 Feb. 1968	61°19'S, 170°38'E
	4.	3 Mar. 1968	Off Stewart Is.	26 Feb. 1968	61°07'S, 159°52'E
Black-browed Mollymawk	1.	14 Jan. 1968	54°29'S, 179°12'E	17 Jan. 1968	65°19'S, 179°36'E
	2.	2 Feb. 1968	52°30'S, 169°08'E	28 Jan. 1968	68°22'S, 170°18'E
	3.	9 Feb. 1968	51°51'S, 168°17'E	15 Feb. 1968	69°02'S, 171°39'E
	4.	2 Mar. 1968	49°26'S, 165°43'E	23 Feb. 1968	70°01'S, 171°03'E
Grey-headed Mollymawk	1.	14 Jan. 1968	54°29'S, 179°12'E		-
	2.		-	28 Jan. 1968	68°22'S, 170°18'E
	3.		-		-
	4.		-	28 Feb. 1968	55°17'S, 159°08'E
Buller's Mollymawk	1.	8 Jan. 1968	Off Banks Pen.		-
	2.		-		-
	3.		-		-
	4.	3 Mar. 1968	Off Stewart Is.		-
Shy (White-capped) Mollymawk	1.		-		-
	2.		-		-
	3.	7 Feb. 1968	50°08'S, 167°02'E		-
	4.		-		-
Grey-backed Mollymawk	1.	12 Jan. 1968	47°43'S, 179°05'E		-
	2.		-		-
	3.	6 Feb. 1968	47°48'S, 168°11'E		-
	4.		-		-
Light-mantled Sooty Albatross	1.	16 Jan. 1968	61°43'S, 179°41'E	18 Jan. 1968	67°55'S, 175°41'E
	2.	2 Feb. 1968	52°30'S, 169°08'E	28 Jan. 1968	68°22'S, 170°18'E
	3.	7 Feb. 1968	50°08'S, 167°02'E	16 Feb. 1968	72°19'S, 170°13'E
	4.	2 Mar. 1968	49°26'S, 165°43'E	23 Feb. 1968	70°01'S, 171°03'E
Giant Petrel	1.	8 Jan. 1968	Off Banks Pen.	14 Jan. 1968	54°29'S, 179°12'E
	2.	4 Feb. 1968	Off Bluff	27 Jan. 1968	71°55'S, 172°15'E
	3.	6 Feb. 1968	47°48'S, 168°11'E	17 Feb. 1968	73°38'S, 171°36'E
	4.	3 Mar. 1968	Off Stewart Is.	21 Feb. 1968	77°45'S, 164°48'E
Cape Pigeon	1.	8 Jan. 1968	Off Banks Pen.	18 Jan. 1968	67°55'S, 175°41'E
	2.	4 Feb. 1968	Off Bluff	28 Jan. 1968	68°22'S, 170°18'E
	3.	6 Feb. 1968	47°48'S, 168°11'E	15 Feb. 1968	69°02'S, 171°39'E
	4.	25 Feb. 1968	64°20'S, 161°00'E	22 Feb. 1968	73°46'S, 170°03'E
Silver-grey Fulmar	1.	17 Jan. 1968	65°19'S, 179°36'E		-
	2.		-	28 Jan. 1968	68°22'S, 170°18'E
	3.	15 Feb. 1968	69°02'S, 171°39'E		-
	4.	25 Feb. 1968	64°20'S, 161°00'E	23 Feb. 1968	70°01'S, 171°03'E
Blue Petrel	1.	17 Jan. 1968	65°19'S, 179°36'E		-
	2.		-		-
	3.		-		-
	4.		-		-
Antarctic Petrel	1.	17 Jan. 1968	65°19'S, 179°36'E	20 Jan. 1968	74°03'S, 172°12'E
	2.	28 Jan. 1968	68°22'S, 170°18'E	27 Jan. 1968	71°55'S, 172°15'E
	3.	15 Feb. 1968	69°02'S, 171°39'E	16 Feb. 1968	72°19'S, 170°13'E
	4.	24 Feb. 1968	67°26'S, 164°25'E	23 Feb. 1968	70°01'S, 171°03'E
Buller's Shearwater	1.	8 Jan. 1968	Off Banks Pen.		-
	2.		-		-
	3.		-		-
	4.		-		-

Species	Traverse	Northernmost Sighting		Southernmost Sighting	
		Date	Position	Date	Position
Sooty shearwater	1.	9 Jan. 1968	43°35'S, 178°08'E	16 Jan. 1968	61°43'S, 179°41'E
	2.	1 Feb. 1968	55°25'S, 168°55'E	28 Jan. 1968	68°22'S, 170°18'E
	3.	6 Feb. 1968	47°48'S, 168°11'E	13 Feb. 1968	61°19'S, 170°38'E
	4.	3 Mar. 1968	Off Stewart Is.	24 Feb. 1968	67°26'S, 164°25'E
Fluttering Shearwater	1.	8 Jan. 1968	Off Banks Pen.		-
	2.		-		-
	3.		-		-
	4.		-		-
Unidentified ? Allied (Little) Shearwater	1.		-		-
	2.	1 Feb. 1968	55°25'S, 168°55'E		-
	3.		-		-
	4.		-	27 Feb. 1968	57°22'S, 159°00'E
Grey Petrel	1.	13 Jan. 1968	50°54'S, 178°57'E		-
	2.		-		-
	3.		-		-
	4.		-		-
White-headed Petrel	1.	8 Jan. 1968	Off Banks Pen.	15 Jan. 1968	57°55'S, 179°27'E
	2.		-		-
	3.		-		-
	4.		-		-
Snow Petrel	1.	18 Jan. 1968	67°55'S, 174°41'E	19 Jan. 1968	70°32'S, 173°18'E
	2.	28 Jan. 1968	70°00'S, 170°18'E	25 Jan. 1968	77°17'S, 164°55'E
	3.	15 Feb. 1968	69°02'S, 171°39'E	18 Feb. 1968	77°15'S, 167°43'E
	4.	24 Feb. 1968	67°26'S, 167°25'E	21 Feb. 1968	77°45'S, 164°48'E
Wilson's Storm-petrel	1.	17 Jan. 1968	65°19'S, 179°36'E	20 Jan. 1968	74°03'S, 172°12'E
	2.	30 Jan. 1968	63°56'S, 168°42'E	27 Jan. 1968	71°55'S, 172°15'E
	3.	11 Feb. 1968	54°41'S, 169°35'E	17 Feb. 1968	73°38'S, 171°36'E
	4.	27 Feb. 1968	57°22'S, 159°00'E	22 Feb. 1968	73°46'S, 170°03'E
Grey-backed Storm petrel	1.	12 Jan. 1968	47°43'S, 179°05'E	14 Jan. 1968	54°29'S, 179°12'E
	2.		-	28 Jan. 1968	68°22'S, 170°18'E
	3.	8 Feb. 1968	52°00'S, 165°00'E		-
	4.		-		-
White-faced Storm petrel	1.		-		-
	2.		-		-
	3.	7 Feb. 1968	50°08'S, 167°02'E		-
	4.		-		-
Diving Petrel	1.		-		-
	2.		-		-
	3.	7 Feb. 1968	50°08'S, 167°02'E		-
	4.		-		-
Southern Skua	1.	17 Jan. 1968	65°19'S, 179°36'E	19 Jan. 1968	70°32'S, 173°18'E
	2.	2 Feb. 1968	52°30'S, 169°08'E		-
	3.	8 Feb. 1968	51°00'S, 165°00'E	9 Feb. 1968	52°30'S, 169°08'E
	4.	29 Feb. 1968	54°37'S, 158°54'E	24 Feb. 1968	67°26'S, 164°25'E
Antarctic Skua	1.	19 Jan. 1968	70°32'S, 173°18'E	24 Jan. 1968	McMurdo Base
	2.	26 Jan. 1968	74°28'S, 169°03'E	25 Jan. 1968	77°17'S, 164°55'E
	3.	16 Feb. 1968	71°00'S, 170°15'E	18 Feb. 1968	McMurdo Base
	4.	24 Feb. 1968	67°26'S, 164°25'E	21 Feb. 1968	McMurdo Base
Antarctic Tern	1.	12 Jan. 1968	47°43'S, 179°05'E	17 Jan. 1968	65°19'S, 179°36'E
	2.	2 Feb. 1968	52°30'S, 169°08'E	1 Feb. 1968	55°25'S, 168°55'E
	3.	8 Feb. 1968	51°00'S, 165°00'E	9 Feb. 1968	52°30'S, 169°08'E
	4.		-		-
Arctic Tern	1.		-	18 Jan. 1968	67°55'S, 174°41'E
	2.		-		-
	3.		-		-
	4.		-		-

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SHORT NOTE

ALTITUDINAL RANGE OF THE ROCK WREN

Until recent years I had always thought the habitat of the Rock Wren *Xenicus gilviventris* to range from about 3000ft. to 6000ft. in suitable rocky places above the bushline. The lowest I knew was at the western portal of Homer Tunnel (Milford Sound) at ca. 2600ft.

However, on several occasions since 1960 I have seen Rock Wrens above 6000ft., and on 21/2/65 found a pair right on the bouldery summit of Black Peak (7566ft.) in the lower Matukituki Valley, Wanaka. This height was surpassed on 17/1/70 when a pair was observed on the rocky summit of Mt. Aeolus, Wilkin Valley, at 7706ft. Just a month prior to this, on 23/12/69, my family and I had watched a pair in a bouldery stream below the snout of the Fox Glacier at an altitude of only 800ft. a.s.l.

It seems that suitable terrain, together with its characteristic plant associations, food resources and nesting sites, is a more important limiting factor than altitude in the distribution of the Rock Wren.

— PETER CHILD