

**Population increase in the King Penguin, *Aptenodytes patagonica*, at Heard Island.**—Heard Island (53° S, 73° E) is a small and heavily glaciated island south of the Antarctic Convergence. Sealers reported in 1929 that King Penguins (*Aptenodytes patagonica*) were breeding there (Falla, R. A., British, Australian and New Zealand Antarctic Research Expedition (1929–31) Reports, Ser. B., 2: 44, 1937). In more recent times only three chicks were seen in 8 years (1947–55) of continuous occupation by the Australian National Antarctic Research Expeditions (ANARE), and Downes et al. (Downes, M. C., E. H. M. Ealey, A. M. Gwynn, and P. S. Young, ANARE Repts., Ser. B, 1: 14–19, 1959) concluded that the King Penguin no longer bred there regularly. In 1963 an ANARE summer party counted 23 breeding pairs at five widely separated parts of the coast, and inferred (Budd, G. M., and M. C. Downes, Emu, 64: 302–316, 1965) that recolonization had begun. A further search was made in 1965 by members of a private expedition, the South Indian Ocean Expedition to Heard Island (Anon., Polar Record, 12: 744). The results, described below, show that in 2 years the breeding population had more than doubled, and that some of the birds were immigrants from another island.

The breeding cycle of the King Penguin at Heard Island resembles that described by B. Stonehouse (The King Penguin *Aptenodytes patagonica* of South Georgia. 1. Breeding behaviour and development. Falkland Islands Dependencies Survey Sci. Repts., no. 23: 13–16, 1960) at South Georgia (54° S, 37° W) where laying takes place from November to April and the parents tend their chicks throughout the winter. In the following summer the chicks fatten, molt from the down into juvenal plumage between November and January, some 10–13 months after hatching, and go to sea within a few days. At the end of their second year they molt from juvenal to adult plumage, possibly at the colony where they will subsequently breed. Juvenile birds are readily distinguished from adults by their pale lemon (instead of orange) auricular patches; less constant juvenile features are black, mauve, or lilac (instead of orange) mandibular plates, and grayish (instead of black) feathers on the crown. Immature and mature adults are generally indistinguishable by sight, and in this note the term "adult" is used for any bird in adult plumage.

The 1965 census covered only the eastern half of the island—where the main breeding colonies are situated—and was made between 31 January and 5 February; in 1963 the same area was searched between 2 February and 7 March. The observers, Warwick Deacock and myself, had taken part in the 1963 census and used the same methods as in that year. Disturbance of the penguins was limited to the amount necessary to verify that an egg or chick was being carried. Identifications of juvenile birds were confirmed by later examination of color photographs taken at the time. Most of the juveniles were molting, often in the company of King Penguins with bright adult plumage and lilac-tinged mandibular plates, who themselves may have been newly molted from juvenal plumage. No chicks of the previous season were seen (nor were any seen in 1963), presumably because they had already gone to sea. The two largest chicks of the 1965 season were standing in front of their parents and would probably have been 2–3 weeks old (Stonehouse, op. cit.: 46); the remainder were hidden by the parent's brood patch, with only a beak or flipper protruding. Some of the adult birds were in molt.

The 1965 census showed (Table 1) that the number of eggs and chicks, at those places which were visited in both years, had increased from 19 to 47, and the number of adults from 52 to 107. These figures probably underestimate the increase in the breeding population, because the 1965 counts at the main colonies were made 3 weeks earlier in the laying period than the 1963 counts.

TABLE 1  
KING PENGUINS AT HEARD ISLAND IN 1963 AND 1965

Only those places visited in both years are included. The 1963 counts shown are those made on dates nearest to those of the corresponding 1965 counts.

Place	Date		Adults		Juveniles		Eggs and chicks	
	1963	1965	1963	1965	1963	1965	1963	1965
Spit Bay (north)	20 Feb.	31 Jan.	24	56	0	6	13	36
Spit Bay (south)	20 Feb.	31 Jan.	10	25	0	8	5	9
Long Beach	2 Feb.	5 Feb.	9	10	4	10	0	1
Skua Beach	6 Mar.	1 Feb.	2	12	0	1	1	1
Fairchild Beach	7 Mar.	1 Feb.	7	4	0	0	0	0
Total			52	107	4	25	19 <sup>1</sup>	47

<sup>1</sup> Four more eggs were laid at other times and places in 1963; 7 more juveniles and some 40 more adults were also seen.

The extent to which successful breeding at Heard Island might be responsible for this large increase in King Penguins is not known, as both the 1963 and 1965 visits were made too late to count the surviving chicks of the previous season. That the increase is due, at least in part, to immigration is suggested by its rapidity, and confirmed by the count of 25 juveniles (birds hatched in 1963) in the 1965 census (Table 1). The 1963 census, which was very thorough and covered the whole island, had shown that no more than 17–20 chicks could have been raised that year (Budd and Downes, op. cit.), and this number would certainly have been reduced by natural mortality during the first winter and the juvenile year. Finding more juveniles on Heard Island in 1965 than there were eggs or chicks in 1963 proves that at least some of them were immigrants, probably from the large colonies at Kerguelen (49° S, 69° E), some 290 miles to the northwest.

The population changes at Heard Island are not readily explained by changes in weather or in disturbance by man (Budd and Downes, op. cit.). Changes in predation also seem unlikely causes. The main natural predator of the King Penguin, the Giant Petrel (*Macronectes giganteus*), breeds in thousands on Heard Island but its population has shown no obvious change since 1955, and neither it nor the Southern Skua (*Stercorarius skua lönnbergi*) was seen near the King Penguin colonies in 1963 or 1965. Nor are there any introduced predators on Heard Island—in contrast to many other antarctic and subantarctic islands (Downes et al., op. cit.: 9–10). Whatever its cause, the increase in King Penguins observed in 1963 was continuing in 1965, and as the main colonies are in a sheltered area, are free from interspecific competition, and have ample room for expansion, further counts between November and April—preferably in February or March—should provide a useful study of population growth under natural conditions.

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