

General.—The above figures are means of several counts in nearly every case, but the sums of the extreme figures are within about 50 nests of the mean. No predatory animals were seen at the gannetry but a few broken egg shells were on the shore platform beneath the south group. Very few dead gannets were seen; no birds in juvenile plumage were present; no "unemployed" birds were recognised. Where nesting gannets adjoined scrub it was being locally invaded, but elsewhere bare ground, apparently suitable, was unoccupied by nests.

Postscript.—The above account was written before J. M. Cunningham's visit to Horuhoru, on December 1. In view of the big decrease in occupied nests between October 2 and December 1, some elaboration of the criteria for "occupied nests" in the earlier count is desirable. Occupied nests included: (1) Nests with egg, these accounting for over half the nests, and therefore totalling about four times the number of eggs and chicks counted in December; (2) empty nests with newly arranged fresh seaweed or other vegetation (e.g., *Parietaria*), either with or without attendant birds; in October many birds put to sea and there seemed ample birds for such vacated but obviously fresh nests; (3) empty nests, whether newly-lined or not, on which an adult sat in the incubating position when the count was made: most of such nests were, in fact, freshly lined. Old nest sites with neither new nesting material nor attendant bird were excluded from the counts; at Horuhoru there were very few of these on October 2. I believe the high October count at Horuhoru gives the correct order of magnitude of the population unless (a) a pair sometimes build more than one nest, i.e., a "play-nest," in addition to the functional nest site, (b) unoccupied breeding adults habitually sit on non-functional nest sites, or (c) submature birds incapable of breeding, are attached to the colony, building and occupying nests during the earlier part of the season. None of these postulates is supported by what we know of the breeding economy of *Sula*, but since the Australasian gannet moults into adult plumage within about nine months of leaving the colony (see Buller, *Birds N.Z.*, 2nd ed., vol. 2, p. 177 and pp. 179-80, for account of captive bird), submature birds may be present at the gannetries. Tramping and piracy of nest material could easily account for the obliteration of many nests in two months. The 1946-47 gannet census has revealed a low rate of nesting success in most New Zealand gannetries, and discussion of the general problem would be out of place here.

IV.—HORUHORU GANNETRY, DECEMBER 1, 1946.

By J. M. Cunningham, Masterton.

On December 1, 1946, a visit was made to the Horuhoru Gannetry by the writer and P. J. Parr, thanks to the courtesy of Major M. E. Johnson, of Auckland. A visit of 1½ hours had been made earlier in the year, on October 2, by C. A. Fleming, and his results were available on the occasion of the present trip. Though only an hour was spent ashore, it is felt that this brief period detracted in no way from the accuracy of the survey except in the case of North Stack, on which a landing was not made. Owing to the small number of occupied nests, there was no difficulty in counting their number, and the natural divisions of the colony, as shown by Fleming in a sketch map of the island, were well defined and were again used as a basis for subdivision on the present

occasion. In the details which follow, Fleming's figures being in parentheses, only nests containing eggs or chicks, or else chicks out of the nests are included in the totals. No new nests were seen, nor were any flying young recorded.

North Stack.—A landing was not made on North Stack, but counts from the sea revealed about 100 birds on the north-east slope and 109 on the south-west slope. Of 97 birds counted from the main island, only c. 21 appeared to be on nests or with chicks, and on the basis of one nest to every five birds, there would be something like 40 nests (128).

North Group.—Nests with one egg, 2; chicks, light down, 4; all white, 3; total, 9 nests (55). Used nests, c 10. A count from the sea showed 61 birds in the part of this subdivision which was visible from the sea. A little to the east of this group was a group of 4 birds with one nest (chick, quills appearing). Grand total, 10 nests (55).

North Central Group.—Nest with one egg, 1; chicks, naked, 1; quills appearing, 3; light down, 2; all white, 4; 11 nests (213). Used nests, c 120.

Central Group.—Total nests, unclassified, 69 nests (689).

South Group.—Ridges and ledges, total nests, unclassified, 27 (143).

Summary.—

	J.M.C.	C.A.F.
North Stack	c40	128
North Group	10	55
North Central Group	11	213
Central Group	69	689
South Group	27	143
	<hr/> 157	<hr/> 1228

It was realised at the time that these figures fell far short of Fleming's, and therefore in some of the subdivisions counts were made of the nests which had apparently been used. Even these figures are insufficient to account for the large number of nests counted by Fleming, and inevitably give rise to conjecture as to their fate. It was found to be difficult to decide in some cases as to what had been a nest, and owing to heavy trampling down by adult birds, many could easily have disappeared from this cause. It is recalled that Wodzicki (in ms), noted a similar occurrence at Kidnappers, and it seems probable that, whatever the cause of the nests being deserted, the mound would soon get trampled down by other birds. Any eggs, if broken, would be ground to powder and not be visible at a later date (the writer saw no eggshells) but it would be interesting to subject a sample from one of these mounds to a microscopic examination. A small number of dead chicks and adults were seen, the chicks being practically buried in the dust and guano, but no predator of any kind was recorded. Some adults had been caught by the neck in forks of taupata (*Coprosma retusa*). No good estimate was made of the number of adults present, but they were sitting all over the nesting areas just as if on nests. The total may well have been 1000-1200. When approached they showed none of their customary fearlessness, suggesting possibly that they had been molested recently. All the birds took to the air, circling over the island, and eventually settling, but never within 20 yards of the observers.

The only other birds seen on the island were a few starlings (*Sturnus vulgaris*) believed to be nesting there, and a colony of white-

fronted tern (*Sterna striata*) on the southern ledges. There were at that time 38 nests (1 egg, 35 nests; 3 eggs, 1; 1 chick, c 2 days, 2). There appeared to be a number of birds without nests.

V.—COLVILLE GANNETRIES, SEPTEMBER 9, 1946.

By C. A. Fleming, Wellington.

On September 9, 1946, through the good offices of Mr. W. Tidey, Marine Department, Coromandel, I was able to visit the islets south-west of Colville in the eastern Hauraki Gulf, to assess the population of breeding gannets as part of the Ornithological Society's gannet census project.

This report is offered to provide a basis of comparison with counts made at other times. At this early date less than half the nests contained eggs, and adults readily left the colony, so that the basis for the counts was the number of nests at which freshly arranged seaweed, etc., suggested occupation by a pair intending to breed; such a count may give an over-estimate of the number of breeding pairs if submature birds habitually build nests without laying or if unoccupied mates ever build separate "play nests." On the other hand some eggs are laid in old nest sites without much preparation, and old nest sites were excluded from the present count. The sketch plans do not aspire to accuracy but should allow identification of the areas by later visitors.

Gannets now nest on three of the islets grouped on Admiralty Chart No. 2543 as Motu Kawai Group, 2-3 miles off the west side of Coromandel Peninsula.

1. **Motu Takapu (Gannet Rock).**—This, the outermost of the group, is a boat-shaped rock about 130 yards long rising above a tidal platform, the top accessible at the narrow north end from which the rock rises and expands to a width of about 20 yards before narrowing to the vertical-sided south end. Prominent steps, rock joints and boulders enabled subdivision of the area occupied by nests as shown in the sketch. The numbers of nests were: A, 24; B, 25; C, 23; D, 48; E, 19; F, 28; G, 20; H, 51; I, 9; J, 3; K, 6; L, 32. Thirty-seven per cent. of nests contained eggs, all of which were counted on this islet, the percentage in individual groups ranging from 21 to 57. There appeared to be room for more than the total of 288 nests found.

2. **Double Island, South-west Stack.**—From the boat and from Bush Island, 6 to 10 gannets were counted on the small islet off the tip of Double Island; some appeared to be on nests, and in default of more precise information the population is put at five pairs.

3. **Bush Island.**—This is a scrub-covered steep-sided island with high promontories on its western side, their summits occupied by a number of ganneries which can be grouped as follows:—

A. **South Promontory.**—Two groups of 48 and 54 nests and a ledge with six nests, totalling 108 nests, of which 44 (41%) had eggs.

B. **West Promontory.**—A narrow ridge with 44 nests to east; knob with 38; further ridge with 71; separated by rock from 32 on east of ridge top, and separate ledge 50 feet below with 97 nests; totalling 282 nests.

C. **West Stack.**—Reported old site (capacity about 20 nests), but no nests present though probably regular roost.