

LETTERS

Sir,

In the June issue of *Notornis* Drs. Falla and Fleming and Mr. Kinsky gave reasons why they believe that the bird figured on page 223 of the previous volume is a Royal Penguin and not a Macaroni as stated in the accompanying article.

The identification was not based on a consideration of minor character differences such as Falla *et al.* state to exist between Macaronis and dark-faced Royals, but on the scarcity of the latter as noted during 15 months residence on Macquarie Island during which many thousands of Royals were handled. No precise data on the proportions of black-faced birds to non black-faced ones were collected during my stay but I would suspect that the proportion is nearer to 1 in 100,000 than to 1 in 10,000 birds. The probability of such a bird from Macquarie turning up on the Snares is correspondingly low and as the available data on the animal in question fit a Heard Island Macaroni just as well as they do a black-faced Royal, the bird was considered to be a member of the typical sub-species.

The penguin was described by my fellow author B. R. Keeley (the paper was not written solely by John Warham as Falla *et al.* indicate) and the identification based on his description and measurements and on Mr. Cameron's photographs.

May I examine the characters set out by my critics point by point ?

(a) "The white patch on the upper tail coverts, common in Royals and rarely, if ever, found in Macaronis." If true, this would be a most convenient diagnostic feature but reference to Figure 89 in one of Falla's papers (BANZARE Rep., Ser. B, Birds, 1937) shows that at Heard Island breeding Macaronis have white upper tail coverts. These are shown even more clearly on Plate 49 of "The Birds of Heard Island" (Downes, Ealey, Gwynne and Young, ANARE, Rep., B. 1959. See also the description in "Oceanic Birds of South America" Murphy, 1936, p. 432). Thus it seems that at the nearest breeding station to New Zealand for Macaronis, if not elsewhere, breeders have white rumps just as most breeding Royals do. Some of the latter, however, lack this character (see e.g. Fig. 103 in Falla, *loc. cit.*), yearlings especially (pers. obs.).

(b) "the much larger area of naked skin at the gape in Royals." The Snares Island bird shows this feature well but comparison with photographs of Macaronis is again instructive. Take Plate I in "Penguin Marking at Heard Island" by Downes and Gwynne (ANARE Interim Rep., 8, 1955). This shows a pair of Macaronis. Both birds have large and prominent bare areas at their gapes, much more pronounced than that in Kinsky's "Macaroni" at Campbell Island but much the same as in his "Royals" from the same place (*Notornis*, 17 (4), Pl. XXXIII and XXXIV). My own photographs of live Royals show that this is a variable character in these birds. In fledglings the bare area is hardly visible, in yearlings well developed but it appears to be most pronounced in breeding males and less so in females. It is often very similar in extent to that shown in Downes and Gwynne's plate. Thus the assertion that its size in the Snares Island bird supports its identification as a Royal, needs substantiation, in my view.

(c) "the top heavy bill." The Snares bird certainly had a large bill hence our suggestion that it was a male. The size is accentuated in the photograph by the rather high viewpoint. Judging from the meagre published data, e.g. in Murphy (*loc. cit.*) Macaronis do appear on average to have smaller bills than Royals and I have referred to this elsewhere (Warham, in press) but the ranges of the variation in live birds overlap. The bill length of the Snares bird lies within the range given by Downes and Gwynne for a very small



FIGURE 1 — Dark-faced Royal Penguin, Macquarie Island.

sample of Macaronis. Furthermore, if the Snares bird is compared with their figure the bill is seen to have much the same size and proportions as the male of that particular pair.

(d) "the apparently jet black throat." In the photograph of the Snares Island bird the cheeks and throat are in shadow, but these were very dark, if not "jet black." Kinsky (*loc. cit.* p. 229) states that apart from the normal pale cheeked birds some Royals have either silver grey or jet black cheeks, chins and throats whereas Macaroni Penguins can be separated by their grey black cheeks, chins and throats. The accompanying photograph shows a male *Royal* with grey black cheeks, chin and throat. It bred at Macquarie Island in company with a normal pale-cheeked partner. Note that the condition of the cheeks and throat agrees nicely with Kinsky's "Macaroni" from Campbell Island.

My photograph shows a typical dark-faced Royal and I can recall only one that was darker than this. It is figured by Stonehouse (Penguins, 1968, p. 34). At that island there seemed to be a complete gradation from white cheeked to dark cheeked birds, not a clear separation into distinct types as Kinsky states. That there is some variation too with Macaronis is obvious from Downes and Gwynnes' photographs and also from statements in "The Birds of Heard Island" where it is noted (p. 56) that birds with grey cheeks were not uncommon "though this is not the usual impression among breeding birds." The "rare occurrence of white-faced birds among the otherwise uniformly black-faced Macaronis at Heard Island" is also recorded. Thus I remain unconvinced as to these alleged differences between typical Macaronis and black-faced Royals and cannot agree that the dark condition of the throat of the Snares Island bird aids its determination as a Royal.

Mr. P. D. Shaughnessy, who worked on the distribution of the various face-colour varieties of Royal Penguins at Macquarie Island, confirms (in *litt.*) that face, cheek and throat colour form a continuum between those with wholly white faces, cheeks and throats and those with wholly black faces, cheeks and throats. A Royal with a face as dark as that of the Snares Island bird would be very rare. Furthermore, he found a much higher frequency of dark-faced females than males and on this basis thinks the Snares Island bird unlikely to have been a Royal.

Indeed all the characters brought up by Falla *et al* seem at best equivocal. I certainly agree with Kinsky's determination of his Campbell Island birds judging by his photographs, not because of their possession of any special characters but because of the rarity of black-faced birds at Macquarie and of white-faced ones at Heard Island.

This discussion is given added piquancy by the appearance in 1970 of yet another dark-cheeked *chrysolophus* on the Snares. This time it was a rather small-billed bird, probably a female and with a well developed crest. We have still not seen any light-cheeked birds. Only Kodachromes of this new arrival are available, unsuitable for reproduction, but I am circulating copies of these to my critics for a copy of this letter and shall be interested in their comments.

Analyses of data from large samples of live *Eudyptes* of four species (or sub-species) now being undertaken indicate that although there are significant differences between some populations in things like bill size and colouration there is not only a considerable overlap but long tails to the distribution curves. It is thus necessary to have statistically adequate samples measured under similar conditions to evaluate the differences. Also like must be compared with like, e.g. female yearlings with female yearlings and male breeders with male breeders. This range of variation makes the identification of strays of unknown provenance all the more difficult.

I have no doubt that using adequate samples some real differences will be found in mensural and other characters between Royals and Macaronis and if Falla, Fleming and Kinsky could publish data on, say, bill dimensions in breeding birds for these two sub-species it would certainly give us something more positive on which to work.

— JOHN WARHAM



Sir,

As Mr. Warham has kindly given us a preview of his comments and illustrations and invited further comment, we accept the obligation to offer them. Not having seen the bird, as apparently one Mr. B. R. Keeley did, we realise that we and Mr. Warham have to base our discussions mainly on the unsure ground of interpreting photographs and the still more contentious one of weighing up probabilities. Our challenge to an identification based on an assumption (i.e. that the probability of a black-faced Royal Penguin turning up at Snares was low because the proportion of them occurring at Macquarie Island is very low) was perhaps equally subjective in its reliance on a combination of criteria of plumage and structural characters, each admitted to be variable to the point where they could overlap. Mr. Warham considers them to be "equivocal," and we would agree if they had to be applied separately. We relied on weighing up a combination of them, with some dependence on size factors as far as the data permitted. Readers may be left with the impression that there are no safe criteria for distinguishing Macaronis from dark-cheeked Royals and vice-versa, and this may well be the case for a few convergent specimens. However, we think it can be done and agree completely with Mr. Warham that the material used must be comparable in respect to age, sex, and stage of the annual cycle. To re-assess the criteria that have been suggested we turn to Mr. Warham's lettered points:

(a) "The white patch on the upper tail coverts." Here we capitulate. His point is well made, and we agree that this factor can be ruled out for identification purposes.

(b) "Larger area of naked skin at the gape." Agreeing that this feature is pronounced in both Royals and Macaronis in comparison with other crested penguins, and that its extent is determined by age and sex, we would yet observe that it commonly extends in old male Royals almost to the point of disfigurement, curving up

as a warty strip round the base of the latericorn of the bill into the narial groove. This seems to show, if the highlights are not playing up again, in the figure of the 1969 Snares bird. It also shows in the print of a white-cheeked Royal accompanying Warham's letter, though it may be lost in half-tone reproduction. By contrast in female Royals and in Macaronis the upper extension usually ceases to be conspicuous about half-way up the latericorn just above the gape.

The citation of Downes and Gwynn (1955, Pl. 1) shows it adequately for average Macaronis at Heard Island. However, as a difference it is only a matter of degree and not by itself a safe criterion of distinction.

(c) "The top-heavy bill." Agreed that comparative size is an objective factor that can be used when careful measurements or actual specimens are available, and noting that Mr. Keeley recorded bill and flipper length of the 1969 Snares bird as 65.5 and 196mm respectively, we come to Mr. Warham's further comments. To dismiss as "meagre" the data with which several authors have recorded the size range that may be expected in Macaronis does less than justice to what there is. The cited summary by Murphy (1936) presented a random size range, including Gain's 1914 figures, of 9 males and 10 females from 3 localities. The maximum male culmen length in this series is 64.2 (average 60.3). Since then there have been further data, based on adult breeders, from Heard Island, in papers already cited by Warham. Rand (1954) also records a breeding male from Marion Island with culmen 60. Downes and Gwynn (1955) in live measurements of seven mated pairs at Heard Island certainly have one male at 66, no doubt the basis of Warham's conclusions that the Snares Island bird is "within the range" of Macaronis, but the range of their male series is 57-66 and the average 61.2. One of us (Falla, 1937), in an earlier study of Heard Island Macaronis collected and recorded breeding males with culmen 62 and 63. An opportunity to examine Royals at Macquarie Island on the same date in the following year prompted a comparison in which were recorded dimensions of a random series of skins which included 10 males with culmen range 64-73 (average 66.5 for Royals). Another difference disclosed by the measurements was in length of flipper which was longer by 13mm (average) in Royals than in Macaronis. The actual dimensions given (e.g. pp. 96 and 100) are useless by modern standard flipper measuring technique, but the same method was used for both. A re-measurement of a small series in the Dominion Museum shows Royal flippers 20mm longer. The general postulate of size differences was re-examined and confirmed by Jouanin and Prevost (1953), the work including an examination on their behalf by Dr. Jean Dorst of the considerable series of Macaronis and Royals in the British Museum. All in all it seems unsafe to conclude that a penguin with culmen length of 65.5 is probably a Macaroni.

(d) "The apparently jet black throat." Here again we are back on subjective ground unless specimens are used, and are aware of the pitfalls of light and shadow in photographs. We gather from the quotation from Mr. P. D. Shaughnessy that a Royal with a face as dark as that of the Snares bird in question would be very rare.

This we find confusing in view of the fact that black-faced birds from Macquarie Island available as specimens in several collections (Auckland Museum and some in Australia) are all blacker than any Macaroni specimen known to us.

If there is a continuum at Macquarie Island from white face to black face Royals there must be some birds identical, in facial pattern at least, with what we consider the norm for Macaronis. This has always been a subject for speculation among ornithologists visiting Macquarie Island, for in addition to any genetic trend in the local breeders there must be an occasional genuine Macaroni stray like those which reach Cape Hallett, the Ballenys, and Campbell Island. (One such Macquarie Island stray is No. 8963, Dominion Museum). Not surprisingly most of us have indulged in a change of opinion several times, including apparently Mr. Warham for he now presents as "a typical dark-faced Royal" the identical bird which he had earlier figured (*Animals* Vol. 3, No. 2, 17 December 1963), as a Macaroni.

Finally a comment on the Snares bird of January 1970 of which Mr. Warham sent us Kodachromes. It looks like a female black-faced Royal and we gather that he has so diagnosed it. As it happens to show its under-flipper pattern, may we venture a suggestion which would not have been relevant in the case of the photo of the first bird, namely that this character is sometimes useful, when it can be seen.

The 'Field Guide to the Birds of New Zealand' hopefully offered (p. 25) a diagram of flipper patterns. In that shown for the Royal the dark anterior border band peters out to white, or at least has a break in the dark strip before it reaches the extremity. This is the condition shown in the 1970 Snares Kodachrome and also in Warham's bird figured in Stonehouse (1968, p. 34). By contrast most Macaronis seem to have a much stronger dark anterior band; in fact Rand's figure (1955, p. 63) shows it as unbroken in Macaronis at Marion Island, and the several group photographs by Rankin (1951, figs. 96, 98, 99) show some flipper patterns with a predominantly dark leading edge, as in several skins examined in the Dominion Museum. One male in Rankin's fig. 97 is certainly nearer to Royal pattern, so it is again a difference of degree, but diagnostic in the great majority of specimens. In brief our view is that with all the characters that may be convergent or overlapping open to question, the apparently long flipper, and a bill much nearer the Royal than the Macaroni average, must make any firm determination of the 1969 Snares bird as a Macaroni unacceptable.

— R. A. FALLA
C. A. FLEMING
F. C. KINSKY

REFERENCES (other than those already cited by Warham)

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