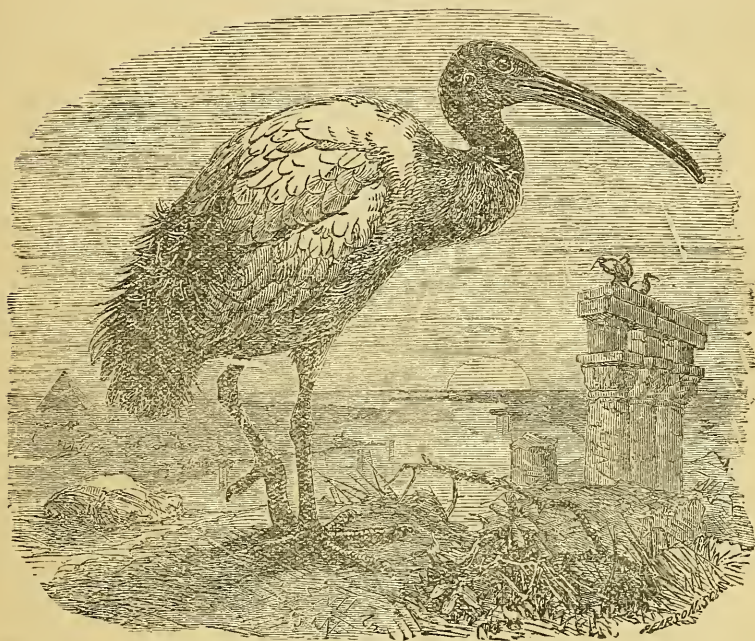


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Delectasti me, Domine, in operibus manuum tuarum.

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1914.

Falconidæ.

Polyboroides typicus.
Elanus cæruleus.

Ardeidæ.

Butorides atricapillus.
Ardetta sturmi.

Ciconiidæ.

Dissoura microscelis.

Charadriidæ.

Charadrius orbesi.
Pluvianus ægyptius.
Stephanibyx inornatus.
Arenaria interpres.

Scolopacidæ.

Numenius arquatus.
N. phæopus.
Himantopus himantopus.
Totanus littoreus.
Tringoides hypoleucus.
Calidris arenaria.

Laridæ.

Sterna maxima.
S. cantiaca.

Rallidæ.

Porphyrio alleni.

Columbidæ.

Vinago calva.

XI.—*An Ornithological Expedition to the Eastern Canary Islands.*—Part II. By DAVID A. BANNERMAN, B.A., M.B.O.U., F.R.G.S.*

ANYONE studying the Avifauna of the Canary Archipelago is doubtless at once struck by the immense number of geographical or insular forms which have been described from these islands. Many well-known authorities are inclined, without taking the trouble to investigate the matter for themselves, to ridicule the idea that so many subspecies can possibly occur there. I have therefore been exceedingly careful to examine closely a series of every bird on which there might rest the slightest doubt as to whether it merits subspecific rank. In addition to this I have had the very great advantage of studying the birds *in their native islands* during the many delightful expeditions which I have made in the last few years. The result of my investigations shows that a very large majority of the subspecies described must unquestionably be "kept up." Naturally, in these island-forms many different grades (if such a word can be used of subspecies) occur side by side. Take, for instance, the Slender-billed Barn Owl (*Tyto flammea*

* Continued from p. 90.

gracilirostris) and the Fuerteventuran Bustard (*Chlamydoti undulata fuerteventuræ*), and compare their claims to subspecific rank with those of the Sardinian Warbler (*Sylvia melanocephala leucogastra*) and the Canary Island Shrike (*Lanius excubitor kænigi*). It is obvious that the first two mentioned have become much further removed from the parent form than the last two, in which very slight modification has taken place. Whether the Bustard and the Slender-billed Barn Owl have become more highly characterised in consequence of longer residence in the Canary Islands than the Shrike and Warbler, it is impossible to say for certain. For we have no means of ascertaining the exact period when any of these birds first became inhabitants of the group. In considering the elements which constitute such an important part in the forming of a well-defined insular race, we have, in the Canary Archipelago, to consider the geographical position of the group in relation to Africa, the climatic conditions of the various islands, their altitude, and particularly the physical environment with which the birds are surrounded. As *time* is the main cause of any species which is isolated from the typical form becoming modified, it might be supposed, and possibly in some cases correctly, that the first birds which arrived in the Canary Islands are those which show the greatest differentiation at the present day, *e. g.*, that the Slender-billed Barn Owl and the Fuerteventuran Bustard became isolated in the Canary Islands many years in advance of the Sardinian Warbler and the Canary Island Shrike. In considering this problem we must bear in mind that the several elements mentioned above undoubtedly act very differently on the various species which now inhabit the group. Another important factor to be reckoned with is the conditions under which the bird lived prior to its having gained a foothold in one or more of the islands. If the conditions are much the same we shall probably find that a very slight change, if any, has taken place in the bird. For instance, the Cream-coloured Courser (*Cursorius g. gallicus*) and the Sandgrouse (*Pterocles arenarius*) which inhabit the islands of Fuerteventura and Lanzarote are obviously immigrants from the neighbouring African coast, and finding, in

these islands, a similar environment to that of their native land, they have settled down and remained quite unchanged from the typical race.

Then take the case of the Pale Titmouse (*Parus cæruleus degener*); this has become greatly modified on account of the unusual surroundings amongst which it now lives and, as in the case of many species inhabiting the waterless desert islands of Fuerteventura and Lanzarote, it is both smaller in size and paler in colour than allied forms living on the well-watered and mountainous western islands.

A particularly interesting case is that of the Barn Owls, of which there are two forms in the Archipelago. The subspecies already mentioned, *Tyto flammea gracilirostris*, is confined to the eastern desert group, where it lives in the holes of cliffs and ekes out a precarious existence. Turning to the western group of islands, we find that they are inhabited by a Barn Owl living under normal conditions which cannot be separated from dark examples of typical *Tyto flammea flammea*.

Provided that sufficient characters meriting subspecific rank are shown to be constant, I have accepted the names proposed, but undoubtedly several new forms have been recently described which can never be regarded as worthy of separation. Size alone is often a very dangerous character upon which to make a new subspecies; but the physical characteristics of the Canary Archipelago, especially as regards the eastern islands, tend to produce geographical races which have become modified in colour as well as in size. In the group with which this paper deals, Fuerteventura, Lanzarote, Graciosa, and the four outlying islets, a very distinct avifauna is to be found. This fauna, as might be expected, is allied to that of northern Africa, while that of the western islands is almost entirely European in character.

In the first part of my paper I have attempted to describe the physical peculiarities of the country through which I passed on my journey. Anyone who is acquainted with the western islands will not, therefore, be surprised at the number of forms peculiar to the eastern group *alone*.

In many cases, distinct, but closely allied geographical races are found to occur, the one in the eastern, the other in the western group.

Of these we may mention the following, arranged in tabular form :—

Subspecies peculiar to the Eastern Canary Islands.	Closely allied form inhabiting the Western Canary Islands.
1. <i>Acanthis cannabina harterti</i> .	1. <i>Acanthis cannabina nana</i> .
2. <i>Calandrella minor polatzeki</i> . (Also found in Gran Canaria, although this latter form has been separated on what I consider to be insufficient grounds.)	2. <i>Calandrella minor rufescens</i> .
3. <i>Parus cæruleus degener</i> .	3. <i>Parus cæruleus teneriffæ</i> . Tene- riffe; Gran Canaria; Gomera. <i>Parus cæruleus ombriosus</i> . Hierro. <i>Parus cæruleus palmæ</i> . Palma.
4. <i>Phylloscopus collybita exsul</i> .	4. <i>Phylloscopus collybita canari- ensis</i> .
5. <i>Tyto flammea gracilirostris</i> .	5. <i>Tyto flammea flammea</i> .
6. <i>Tinnunculus tinnunculus dactotæ</i> .	6. <i>Tinnunculus tinnunculus canari- ensis</i> .
7. <i>Ædicnemus ædicnemus in- sularum</i> .	7. <i>Ædicnemus ædicnemus dis- tinctus</i> .

On comparing the eastern with the western subspecies, it will be seen that those from the eastern group are, with one exception—*Tyto flammea gracilirostris*,—lighter in colour than the birds from the western islands. This is easily comprehended when we realise that the eastern islands are, as Canon Tristram correctly expressed it, “biologically simply western outliers of the Great Sahara,” without any of the rich vegetation which clothes the mountainous western islands. The birds, therefore, which inhabit the eastern group have with the action of time learnt to harmonise more exactly with the desert surroundings amongst which they are placed.

Several Families are confined almost if not entirely to the eastern group, and are not represented by any species in

any of the western islands with the exception of Gran Canaria. The south-east coast of this latter island to a large degree resembles Fuerteventura in character, and both Coursers (*C. g. gallicus*) and Trumpeter Bullfinches (*E. g. amantum*)* are found there: Sandgrouse (*P. arenarius*) have also been seen in this district in former years.

The following species and subspecies represent the Families alluded to above:—

- Erythrospiza githaginea amantum.*
Saxicola dacotiæ dacotiæ.
Saxicola dacotiæ murielæ.
Pterocles arenarius.
Chlamydotis undulata fuerteventuræ.
Cursorius gallicus gallicus.
Hæmatopus niger meadewaldoi.

Only one family is represented by two closely allied forms which inhabit different islands in the eastern group. The Chats (*Saxicola*) being represented in Fuerteventura by *Saxicola d. dacotiæ* and in Montaña Clara and Allegranza by *Saxicola d. murielæ*.

Other species and subspecies found in the eastern group which have not yet been mentioned are either peculiar to the Canary Archipelago or to the islands of the north Atlantic. Of these:—

1. *Carduelis carduelis parva,*
2. *Anthus bertheloti bertheloti,*
3. *Lanius excubitor kænigi,*
4. *Sylvia melanocephala leucogaster,*
5. *Sylvia conspicillata bella,*
6. *Micropus unicolor unicolor,*
7. *Buteo buteo insularum,*
8. *Puffinus kuhli flavirostris* }
9. *Puffinus assimilis baroli* } Madeira and Canary Seas,
10. *Columba livia canariensis,*
11. *Caccabis petrosa kænigi,*

are all breeding birds in the eastern group of islands with the possible exception of *M. u. unicolor*, which has not yet been definitely proved to nest there.

* This bird is also occasionally met with in the desert parts of Tenerife.

The only breeding birds resident throughout the year which are not indigenous to the eastern islands, and which I do not consider separable from either (A) the typical species, or (B) the form inhabiting the opposite mainland of Africa, are the following:—

- *1. *Corvus corax tingitanus.*
2. *Passer hispaniolensis hispaniolensis.*
- *3. *Upupa epops epops.*
4. *Falco peregrinus peregrinoides.*
5. *Pandion haliaëtus haliaëtus.*
6. *Neophron percnopterus.*
7. *Pterocles arenarius.*
8. *Cursorius gallicus gallicus.*
9. *Ægialitis alexandrinus alexandrinus.*
10. *Larus cachinnans.*

and possibly

11. *Coturnix coturnix africana.*

Even in this short list two species marked with an asterisk (*) have been described as geographical races and given new subspecific titles, which for reasons hereafter explained I am unable to recognise. Partial migration of several of the above species undoubtedly takes place.

Besides the Petrels there are a few birds which visit the eastern islands to breed and having done so again take their departure, *i. e.* the Turtle Dove (*Streptopelia t. turtur*), the Corn Bunting (*Emberiza c. calandra*), and the migratory Quail (*Coturnix c. coturnix*). It is also possible, but confirmation of this is necessary, that the House Martin (*Delichon u. urbica*) remains in small numbers to breed in the little island of Allegranza and, at the same time, in certain districts the Pale Swift (*Micropus murinus brehmorum*) undoubtedly remains to breed. The remaining species and subspecies which I met with in the eastern Canary Islands all belong to regular or casual visitors to the group which do not breed in the eastern islands. The majority, it will be seen, are Waders which touch at the islands during the spring and autumn migrations. It is obviously impossible without long residence in an island to determine to what extent the migration of any particular species takes place. We can

only piece together the evidence supplied by naturalists whose combined observations stretch over the different months of the year. In this way we can arrive at fairly correct conclusions with regard to the more *obvious* migratory movements which take place; there is, however, a great deal to be learnt as to the extent to which migration occurs actually amongst the islands; the case of the Corn Bunting (*Emberiza calandra calandra*) alone supplies source for considerable investigation.

It is said to be very unusual for birds to strike the lanterns in the various lighthouses of the group, so that one of the surest sources of gaining information is thereby closed to us. We may infer, however, from the very large number of indigenous forms inhabiting the Canary Islands, that regular migration of Passerine birds is very limited. Von Thanner records that the lighthouse keeper on Allegranza told him that every strong wind coming from the neighbouring coast of Africa, and quite independent of the time of year and the season of migration, brings numerous small and large birds. A thorough survey of the Ornis inhabiting the African coast-line between Cape Ghir and Cape Bojador is necessary before we can discuss with any confidence the relation which it bears to that of the Canary Archipelago. Unfortunately, this part of the African mainland is inhabited by lawless nomad tribes, who have on many occasions shown themselves to be extremely hostile to strangers. The Spanish fishermen from the islands, whose trade takes them along this coast, hold the tribesmen in the greatest dread, and seldom land there unless absolutely compelled to do so.

In the following list I have given the references to each particular species as it was mentioned in the first part of my account of the Expedition, which appeared in the January number of 'The Ibis,' 1914, pp. 38-90.

Reference to this paper is quoted in the following pages as "Bannerman, Part I."

My special thanks are due to the authorities of the Tring Museum for the unfailing courtesy with which they have always met my request for the loan of specimens. I should

like also to acknowledge the help which I have received from Mr. Tom Iredale, whose exceptional knowledge of scientific literature has often enabled me to determine obscure references which would otherwise have been passed over.

I regret that in Part I. of my paper I omitted to acknowledge the debt which I owed to Mr. Claude Grant, who kindly assisted me in selecting the commissariat of the expedition.

The total results of the collections made, including specimens from Gran Canaria, comprise 412 bird-skins (including 3 new subspecies), 224 eggs, and a few skeletons of the more interesting forms; two hedgehogs of a new species, ten bats, and one rabbit. Besides these, large collections of entomological, botanical, and geological specimens were procured.

Corvus corax tingitanus. Moroccan Raven.

Corvus corax tingitanus Irby; Bannerman, Part I. pp. 49, 58, 61, 75, 85, 88.

Corvus corax canariensis Hart. & Klein.

In my recent paper on the birds of Gran Canaria ('Ibis,' 1912, p. 625), I discussed the possibility of upholding *C. c. canariensis* as distinct from the form inhabiting the neighbouring African coast. Eventually I came to the conclusion that specimens from Gran Canaria must be united with *C. c. tingitanus* Irby.

I have lately had occasion to re-examine the material from the Canary Islands in the British Museum; this has only served to strengthen the views which I originally expressed. Examples from Tenerife, Gran Canaria, and Fuerteventura cannot be separated from the Moroccan Raven. The type of *C. c. tingitanus* Irby, in the National Collection, possesses an *exceptionally* short and thick bill, while certain other examples from Morocco and Algeria have longer, weaker, and straighter beaks than in the type-specimen. I have already drawn attention to the Ravens from Gran Canaria which have the bill, if anything, heavier

than in examples of *C. c. tingitanus*. The shape, build, and curve of the bill seem to me to be subject to individual variation in both *C. c. tingitanus* and so-called *C. c. canariensis*. I can see no difference in the shape of the heckles, although, as Dr. Hartert affirms, they may usually be longer.

Dr. le Roi, of Bonn, who has examined a large series of Ravens from the islands, wrote to me last year that he had come to the same conclusion as I have and had united the birds of the Canary Islands with *C. c. tingitanus*.

Ravens were met with sparingly in Fuerteventura but were more common in Lanzarote, where a dozen at a time were seen above "El Risco." They were also present in Montaña Clara and Allegranza.

A single example was obtained in Fuerteventura.

Bill and feet black, iris very dark.

Carduelis carduelis parva. Least Goldfinch.

Carduelis carduelis parva (Tsch.); Bannerman, Part I. p. 48.

It will be noticed that in this Goldfinch the ends of the primaries and secondaries are often "notched"—a peculiarity which is caused by the white tips being worn away to the exact pattern of the original white markings. I have never noticed this in *Carduelis c. carduelis*.

All the examples which I have examined from Fuerteventura appear to have abnormally long bills*.

The Least Goldfinch was met with only in Fuerte-

* [It is interesting to note that the Goldfinch introduced into Bermuda, recently described as *C. c. bermudiana* Kennedy, has, as is usually the case when a bird is imported into a tropical mountainous island, become much darker in colouring, as well as smaller in size. Doubtless in another century the Goldfinch, which has only recently been introduced into the desert island of Fuerteventura, will have become differentiated from the form found in the mountainous western islands of the Canary group. This bird we shall expect to become lighter in colouring and very possibly even smaller in size than is at present the case; probably the bill will become stronger through having to adapt itself to the harder conditions of life in a desert island. It will be instructive to note how soon the action of environment will make itself felt on this particular species.]

ventura, where it has been introduced from the western islands. It is fairly plentiful in the Barranco de la Peña. The examples obtained were all from one locality in Fuerteventura.

Bill flesh-colour, tip dark ; iris dark hazel ; feet flesh-colour. The testes of the males were large.

Acanthis cannabina harterti. Hartert's Brown Linnet.

Acanthis cannabina harterti Bannerman, Bull. B. O. C. xxxiii. 1913, pp. 38, 39 ; Bannerman, Part I. pp. 44, 48, 52, 55, 56, 57, 59, 60, 65, 85.

This new subspecies, which I have recently described, is confined to the eastern islands of the Canary Group. It is easily distinguished from the form found in the western islands by the following characters :—

1. The upper parts are several shades lighter and lack the particularly rich colouring of the western island form.

2. The sides and flanks lack the deep chestnut markings and are less boldly streaked with light brown.

3. The white area on the belly is more extended.

Hartert's Brown Linnet appears to be thinly distributed in Fuerteventura, while in Lanzarote it is practically confined to the Valley of Haria, where it is extremely plentiful. A single bird was seen on Graciosa, but in Montaña Clara it was not observed. It was again found in Allegranza, where, however, it was scarce and very shy.

The series collected was chiefly remarkable for the brilliant crimson breasts of the males, especially in the case of those from Lanzarote, although this is not a distinguishing character of the subspecies.

A large series was obtained from Fuerteventura, Lanzarote, and Allegranza.

Bill light horn-colour ; iris dark hazel ; feet brown.

The following clutches of eggs were taken :—

- (a) 4 eggs, La Peña, Fuerteventura, 11. v. 13.
- (b) 3 eggs, Antigua, Fuerteventura, 15. v. 13. (In an advanced stage of incubation.)
- (c) 2 eggs, Yaiza, Lanzarote, 20. v. 13.
- (d) 4 eggs, Haria, Lanzarote, 24. v. 13.

The eggs obtained showed little variation: ground-colour pale bluish green, thickly spotted, speckled and occasionally pencilled at the thick end with purplish brown and underlying markings of lilac; often a distinct zone is noticeable round the broader end, while the narrow end is sometimes almost unspotted.

Measurements: maximum 19×13.5 mm.; minimum 15.5×13 mm.

Erythrospiza githaginea amantum. Canarian Trumpeter Bullfinch.

Erythrospiza githaginea amantum Hart.; Bannerman, Part I. pp. 43, 50, 52, 54, 56, 65, 85, 89.

A small but beautiful series of this Desert Bullfinch was collected, the adults being in particularly fine plumage, but young birds in various stages were also obtained. As no account of the juvenile plumage of *E. g. amantum* appears to have been published, I append the following description of specimens in my collection depicting two of the stages through which the young birds pass.

The general colour of the fully-fledged young is throughout pale ochraceous brown, brighter on the rump, and becoming paler on the abdomen. The primaries are dark sepia-brown margined with buff, the secondaries being broadly edged, on the outer web, with the same colour. The tail is dark sepia-brown edged with ochraceous buff, the two central rectrices being more deeply margined on both webs than are the outer rectrices. Immature birds entirely lack the rose colour of the adults. The bill is horn-colour and the legs pinkish buff. In very young birds which have not left the nest, we find that the plumage is very different, being of a pinkish-fawn colour and *entirely lacking the sandy tinge* which is gained after the young have commenced to fly. The bill, moreover, is very light yellowish horn, which becomes darker as the bird advances in age.

The Trumpeter Bullfinch is an exceedingly common resident in the most arid parts of Fuerteventura, but is much less abundant in Lanzarote. On Graciosa two small

flocks were seen, while on Allegranza only a single flock was noted.

All the adult males were in very bright plumage and had not yet finished breeding, although many birds of the year were seen in company with the adults.

Specimens were obtained from Fuerteventura, Lanzarote, Graciosa, and Allegranza.

Bill coral-red; iris dark hazel; legs and feet pinkish buff.

Two nests were found on the same date:—

(a) containing 4 young, Antigua, Fuerteventura, 15. v. 13.

(b) containing 5 eggs, " " "

besides which a large series of 24 eggs was obtained chiefly from Fuerteventura.

Ground-colour pale blue, usually marked sparingly with dark purplish-black and reddish-brown spots and dots. The markings are mostly confined to the larger end. Several of the eggs in this series are charily marked with minute isolated dots of purplish black, while another, in contrast, is boldly spotted round the thick end.

Measurements: maximum 20.5×15 mm., minimum 19×15 mm.

One egg in the above series is particularly narrow, measuring 19.5×14 mm.

Passer hispaniolensis hispaniolensis. Spanish Sparrow.

Passer hispaniolensis hispaniolensis (Temm.); Bannerman, Part I. pp. 43, 49, 50, 54, 56, 59, 60.

In the low-lying cultivated districts, wherever there are palm-trees, these noisy Sparrows swarm. They also resort to the wells, in the walls of which they are said to roost in quantities. Their nests were invariably placed in the palm-trees, where they are most difficult to reach. Their habit of nesting in the same tree as the Kestrel Hawk has already been noted elsewhere.

Specimens were obtained from Fuerteventura and Lanzarote in fine breeding-plumage. None were found in the smaller islands.

Bill black; iris dark hazel; feet deep buff.

Emberiza calandra calandra. Corn Bunting.

Emberiza calandra calandra Linn.; Bannerman, Part I.
p. 59.

Emberiza calandra thanneri Tschusi, Orn. Jahrb. 1903,
p. 162.

In 'The Ibis' for 1912, p. 611, I discussed at some length the form or forms of *Emberiza* found in the island of Gran Canaria. At first I inclined to the idea that there were two distinct forms inhabiting the island—a resident mountain race and a coastal migratory race, the chief difference of which was in size. Finally, however, I came to the conclusion, with the aid of Dr. Hartert, who kindly examined the series with me, that the large birds were males and the small birds were females. This did not quite explain the fact that the small birds were invariably much lighter in colouring and had the breast-markings much less pronounced, for there is no constant difference in the plumage of the two sexes, although there certainly is in size.

I should now like to correct a statement which I made in my previous paper. On page 611 (footnote) I stated that I could not vouch for the sexes of specimens *h*, *k*, *l*, and *u*, as I had not dissected them myself. At the time of writing this I was quite unaware that the sex of these four specimens had been personally ascertained by Mr. Pycraft, who examined the sexual organs under a microscope.

Dr. Hartert's supposition that the sex of these birds had been wrongly determined cannot, therefore, be allowed, although at the time it certainly appeared probable.

In the spring of this year (1913), while in Gran Canaria, I collected an additional series of Corn Buntings and found that all the *breeding* birds in the mountain district of Firgas (1625 ft.) belonged to the large dark race. These birds all had eggs at this time, April 22nd to May 4th, and *not a single small light coloured bird was to be seen in the island.*

One example of the large dark form was obtained in Lanzarote, and through the kindness of Miss Jackson I procured a small series from Tenerife—the type-locality of

E. c. thanneri—these birds are similar to those shot at Firgas in Gran Canaria.

Based on a further examination of this species, with the additional material available, I have come to the following conclusions :—

1. That the large dark-breasted birds cannot (at present) be distinguished from *Emberiza calandra calandra*. In this opinion I am supported by Dr. Sassi (*vide* Orn. Jahrb. 1908, p. 34).

2. That these are the resident breeding birds which, with one exception, were all found in the mountain districts.

3. That the wing-measurements of these larger birds vary in males from 94–102 mm., and in females from 92 mm.

4. That the light-breasted small birds are confined to the low coastal regions (likewise only one exception known).

5. That the wing-measurements of this small race vary in males from 87–90 mm., and in females from 85–87 mm.

6. That the small light race has never been found breeding.

The evidence at present available points to this small race being winter migrants, but from where is yet to be proved. If it could be shown that these birds are migrants from a neighbouring island or part of the African coast, I should not have the slightest hesitation in giving to them a new sub-specific name. Until their breeding-place is discovered such a course can only lead to confusion, but it remains an undisputed fact that the birds from the coastal region of Gran Canaria can be distinguished *in life* as well as in the skin from the form inhabiting the mountains.

During the expedition in the eastern islands we only met with the Corn Bunting on one occasion, as we were crossing the high plateau of the Monte Famara range in Lanzarote. A single bird was obtained here which was actually the only one seen throughout the trip. I have not been able to discover at what season the Corn Bunting arrives in and leaves the eastern islands. Polatzek writes that “it is a frequent breeding bird on all the islands; resident only on the western isles; a bird of passage on the eastern.” He

goes on to say that "on the eastern islands, especially as regards Lanzarote, they often appear near the wells by the houses, and they collect in flights on the stubble fields after harvest and in the old straw, finally leaving both islands and returning again in the spring."

Polatzek collected five nests in Fuerteventura, and took clutches of eggs on the 20th of March and the 7th of April. I myself received a clutch from Fuerteventura in the middle of June which contained well-developed embryos. From these dates it would appear that the Corn Bunting usually arrives in Fuerteventura and Lanzarote towards the end of February and remains to breed in these islands, departing again after the summer harvest.

If this is the case, then it is very remarkable that I did not come across the bird in my journey which, as can be seen by referring to the map (Part I. pl. II.), covered the greater part of both the large islands. I remained in the eastern group from May the 5th until June the 17th and kept a sharp look out for this particular species. Whether the exceptionally cold and stormy weather which was experienced at this time had anything to do with the non-arrival of the Corn Buntings, it is difficult to surmise, but it is certain that for some reason they had not kept to their usual date of arrival in the eastern islands.

One bird was obtained in Lanzarote.

Bill light horn; iris dark hazel; legs buff, darker on the feet.

A clutch of eggs, said to have been taken at Tuineje (Fuerteventura), was sent to me on my return to Gran Canaria. I received these eggs, which contained well-developed embryos, in the middle of June. The clutch consisted of four eggs remarkably handsomely marked.

Ground-colour pinkish stone-colour; heavily spotted, streaked, and blotched, chiefly at the larger end, with very dark brown and purplish-black markings, which form a complete zone round the thick end. Beneath the heavy blotches are underlying markings of lavender-grey, and faint streaks are spread irregularly over each egg.

The measurements of this clutch are :—

23 × 18·5 ; 22·5 × 17·25 ; 22 × 18 ; and 22·5 × 18 mm.

Another clutch was taken at Firgas in Gran Canaria, 28. iv. 13.

Calandrella minor polatzeki. Polatzek's Short-toed Lark.

Calandrella minor polatzeki Hart. ; Bannerman, Part I. pp. 43, 44, 45, 46, 49, 50, 52, 53, 54, 56, 58, 59.

The young of this desert Lark is easily distinguished in life from the adult by the much lighter sand-coloured plumage, and by the light buff tips to the feathers of the head, mantle, and back. The secondaries are very broadly edged with sandy-buff and there is a conspicuous narrow inner margin of deep sepia-brown ; this contrasts strongly with the lighter brown colour of the rest of the feather, the shaft of which is also dark sepia-brown. The crest is much shorter in the immature birds than in the adults. In nestlings the upper parts have a spotted appearance caused by the deep brown centres to the feathers of the crown and back which are tipped with buff.

* A very complete description of the seasonal changes of this desert Lark is given by Herr Polatzek (*Orn. Jahrb.* 1908, p. 193).

Polatzek's Short-toed Lark is one of the commonest birds to be met with in the two large eastern islands, where, however, it is not universally distributed. Wherever there is corn planted, particularly on the higher ground, these little birds are most plentiful. They abound on the central plains of Fuerteventura, but are less common on the west coast. In Lanzarote they were entirely absent from the valley of Haria, but swarmed on the high table-land which we crossed before descending into this valley. In the smaller islets they were entirely absent. During our journey in Fuerteventura and Lanzarote a large number of young birds were noted, and a nest containing young was found at Antigua (Fuerteventura) on May the 15th.

A series was obtained from Fuerteventura and Lanzarote. Bill light horn-colour ; iris dark hazel ; feet pale buff.

In a series of 32 eggs of *C. m. polatzeki* procured in Fuerteventura, an extraordinary variation is noticeable in shape and coloration, in which at least three more or less distinct types are recognisable.

The most common type appears to have a ground-colour of creamy-white and to be fairly regularly spotted with pinkish brown or greenish brown, with underlying spots of lavender-grey.

Another type of which I obtained several examples had the ground-colour creamy-white with dense blotches of greenish brown, either forming a complete girdle round the middle of the egg or a zone round the broad end. In many cases underlying blotches of pale purplish grey are present. All the eggs in this class have a distinct yellowish tinge about them.

The third and last distinguishable type, which seems to be the most uncommon, has a ground of stone-colour and is finely speckled with pale greenish grey becoming suffused at the larger end.

The eggs of this subspecies are usually oval and slightly pointed in shape. The measurements of the above series of 32 eggs are: maximum 21.5×14 mm.; minimum 18×14 mm. Two peculiarly shaped specimens measure 19.5×16 and 20×13 mm. respectively.

Anthus berthelotii berthelotii. Berthelot's Pipit.

Anthus berthelotii berthelotii Bolle; Bannerman, Part I. pp. 43, 44, 45, 46, 49, 52, 54, 55, 56, 57, 59, 60, 65, 75, 85, 89.

Anthus berthelotii lanzarotæ Tschusi & Polatzek, Orn. Jahrb. 1908, p. 191.

The Pipit from the eastern Canary Islands has been separated from the bird found on the western islands under the name *Anthus b. lanzarotæ*. I purposely collected a large series from the eastern islands in various plumages to compare with the series I had already obtained of *Anthus b. berthelotii* in Gran Canaria. With the added material in the British Museum I have carefully studied the validity

of this new form. I consider that the reasons for assigning subspecific rank to the Pipit of the eastern islands are far too complex to be upheld; even if the supposed characters were constant. From the large series at my disposal (including birds killed in every month) the characters given appear to be very doubtful, and therefore I unite the Pipits from the eastern group with *Anthus b. berthelotii*.

The form of Berthelot's Pipit inhabiting Madeira and Porto Santo is easily distinguishable from the typical form, a well-marked character being the length of the bill, which for a bird of this size is most pronounced. This has been named by Dr. Hartert *Anthus berthelotii madeirensis*.

Berthelot's Pipit was met with fairly plentifully in most parts of Fuerteventura and Lanzarote. It was also found on the small islands of Graciosa, Montaña Clara, and Allegranza. Many of the birds were in full moult in June. Their habits are too well known to require further mention here.

A large series was collected from Fuerteventura, Lanzarote, Graciosa, Montaña Clara, and Allegranza.

Bill light horn-colour; iris dark hazel; feet pale buff.

The following clutches of eggs were secured:—

(a) 5 eggs, Yaiza, Lanzarote. 22. v. 13.

(b) 4 eggs (2 broken), Haria, Lanzarote. 26. v. 13.

Ground-colour greyish stone-colour, minutely freckled with different shades of brown, greenish grey and lavender-grey with occasional hair-streaks generally towards the thick end. Apart from various degrees of stone-colour there is very little variation in the eggs which I have seen from the eastern Canary Islands. I have never come across any similar to those described in the 'Catalogue of Birds' Eggs' in the British Museum, from clutches obtained by Capt. Savile Reid. These eggs, which were taken in Tenerife by the above mentioned extremely careful collector, closely resemble those laid by *Calandrella minor rufescens*.

The following are the measurements of the eggs obtained:—

Clutch (a) 20×15 , 19.5×14.5 , 20×14.5 (3 eggs);

„ (b) 21×15 , 20.5×14.5 (2 eggs broken).

Parus cæruleus degener. Pale Blue Titmouse.

Parus cæruleus degener Hart.; Bannerman, Part I. pp. 47, 60.

The young in first plumage have the back greyish green, the underparts are paler throughout than in the adult and they lack any white on the head. The parts which in the adult are white, in the young bird are dull yellow. The black throat is also wanting in juvenile specimens.

The Pale Titmouse is confined to the islands of Fuerteventura and Lanzarote, in both of which it is very locally distributed. In Fuerteventura we met with it for the first time in the Tamarisk valley of La Peña, where both adult and immature birds were common. This was the only occasion upon which we met with *Parus c. degener* in this island. It occurs, however, in several districts, particularly where cactus abounds, and it is also very partial to fig plantations.

In Lanzarote the range of this species is equally narrow, being restricted to the valley of Haria and immediate neighbourhood, where it is very plentiful. Mr. Meade-Waldo found a nest containing young on El Risco on the 8th of April. We were apparently too late in the year to find the eggs ourselves.

A series was obtained from Fuerteventura and Lanzarote. Bill dark horn; iris dark hazel; feet slate-colour.

Lanius excubitor kœnigi. Kœnig's Grey Shrike.

Lanius excubitor kœnigi Hart.; Bannerman, Part I. pp. 43, 44, 46, 48, 49, 50, 53, 54, 57, 60, 65, 89.

The series of this Shrike which I obtained shows the bird in different stages of moult; many of the birds are in very worn plumage, the primaries being quite brown. Several examples have a very sandy appearance, caused in most cases by the bird moulting out of the immature plumage into the grey of the adult. I did not notice any birds in the complete sand-coloured plumage in which Mr. Meade-Waldo found one or two.

Examples of Kœnig's Grey Shrike were found in

Fuerteventura, Lanzarote and Graciosa, where they are evenly distributed over the greater part of the islands.

Bill black; iris dark hazel; feet black.

Phylloscopus collybita exsul. Lanzarote Chiffchaff.

Phylloscopus collybita exsul Hart.; Bannerman, Part I. p. 60.

At the time of my visit to Lanzarote I was not aware that Dr. Hartert had separated and named the Lanzarote Chiffchaff. On comparing the examples obtained with my specimens from Gran Canaria of *P. c. canariensis*, I was at once struck with the difference which existed in colour between these two island forms. The wing formula, however, appears to be similar to that of *P. c. canariensis*.

Dr. Hartert has kindly sent me a small series of this Chiffchaff from the Tring Museum. It is distinguished from *P. c. canariensis* by its somewhat smaller size, somewhat lighter, less olive-brown upperside, and less red, more fawn-yellow underside. The under wing-coverts are a paler shade of yellow.

The Lanzarote Chiffchaff was not met with until we reached the valley of Haria, where, however, only three or four birds were heard. They are resident in this district throughout the year according to Polatzek, who took two nests. This ornithologist, who spent a considerable time in Lanzarote, found them much more plentiful in the Haria district than I did myself; he also discovered them at Mal Pais.

This Chiffchaff has not yet been found in Fuerteventura or in any of the smaller islets.

Examples were obtained from Lanzarote.

Bill dark horn-colour; iris dark hazel; legs and feet very dark brown in one specimen, greenish brown in the other, soles yellow.

Sylvia melanocephala leucogastra. Canarian Black-headed Warbler.

Sylvia m. leucogastra Ledru; Bannerman, Part I. p. 47; Sassi, Orn. Jahrb. 1908, p. 34.

Dr. Sassi, who compared a series of the Sardinian Warbler from the Canary Islands with a series from the typical locality, came to the conclusion that specimens from Canary could not be distinguished from European examples. Dr. Sassi, however, on his own statement only compared males, which, as I pointed out in my paper on the Birds of Gran Canaria ('Ibis,' 1912, p. 601), very closely approached *Sylvia m. melanocephala* Gm., but a much greater difference is exhibited by the females. An examination of hens from the Canary Islands and from Sardinia will, I think, show clearly that the two races must be kept apart.

This geographical race of the Sardinian Warbler is by no means rare in Fuerteventura, though necessarily rather local in its distribution, being practically confined to the places where tamarisks flourish. We first met with it in the barranco de la Peña (Part I. Pl. III. fig. 1) on the west coast, where it was fairly plentiful; it must also be found in the dry valley of Gran Tarajal on the east coast. Herr von Thanner met with it in the district known as Rio de las Palmas and also at Antigua, where, however, I did not see it. It had finished breeding in Fuerteventura, several empty nests being found in the tamarisk bushes.

We did not come across this Warbler in Lanzarote or any of the smaller islands; Polatzek, however, mentions the bird from Lanzarote.

A small series was obtained from Fuerteventura.

Bill dark blackish horn-colour, lower mandible whitish at the base; iris light hazel, eyelids brilliant reddish orange; feet ochreous yellow.

Sylvia conspicillata bella. Canarian Spectacled Warbler.

Sylvia conspicillata bella Tschusi; Bannerman, Part I. pp. 60, 65, 85, 89.

In Fuerteventura we only saw this little Warbler in the north of the island on one occasion. In the south we met with it again in the barranco of Gran Tarajal. It is said by von Thanner to appear everywhere but not to be very

numerous. Polatzek notes that he seldom saw it in Fuerteventura. We next came across this bird in Lanzarote, where it frequented the valley of Haria, but it was even more plentiful on Graciosa. This was the only small island upon which we found it.

A small series was procured from Fuerteventura, Lanzarote, and Graciosa.

Bill light horn-colour; iris light brown; feet deep buff.

Saxicola dacotiæ dacotiæ. Fuerteventuran Stonechat.

Saxicola dacotiæ dacotiæ Meade-Waldo; Bannerman, Part I. pp. 43, 44, 47, 48, 52, 89.

The local range of this Chat appears to have increased considerably in Fuerteventura since Mr. Meade-Waldo discovered it in 1888.

It may be of interest to summarise the observations of naturalists who have visited Fuerteventura, on the distribution of this Chat so far as it has been at present observed.

1888. Discovered near Tuineje by Mr. E. G. B. Meade-Waldo.

1889. Meade-Waldo found it again between Pozo Negro and Tuineje; a few seen in the mountains near Tuineje, probably in the direction of Catalina Garcia, two pairs seen in a small mountain barranco where there was a little scrub. Later a pair was found on the beach at Gran Tarajal. Meade-Waldo notes in his diary that the Chats seem very rare.

1902 } Herr Polatzek, who spent three and a half years amongst the
1903 } islands, chiefly I believe in Fuerteventura, found them in the
1904 } barranco de Rio Cabras (Valle de la Laguna), and in other
1905 } ravines on the *eastern* side of the island. They were also met
with in a small valley near Casillas del Angel and in the district round Oliva. Polatzek remarks that it is possible to go a long way without meeting with any and that he *never* found them on the western side of the island; he suggests, as a reason for their absence from the western coasts, that in strong winds they struggle heavily and have much difficulty in flying.

1904 } Herr von Thanner, who has made several collecting trips to this
1905 } island, thought that the breeding range of this species was
1910 } spreading, but remarks that these Chats are often confined to
1912 } very narrow places. He appears to have found them especially in the low valleys which lose themselves towards the east and south-east coasts. They were also seen in the neighbourhood of

Oliva, and were met with in the north of the island in all places favourable to them, even in the interior. In 1905 he found them at Rio de las Palmas. This is the first mention of this species west of the central range of hills.

1913. In the route which I followed [*vide* Map, in Part I. Pl. II.], starting from Puerto Cabras and crossing to Toston on the north-west coast, we first met with these Chats between Caldereta and Oliva, several being seen there. We next found them in the Tamarisk valley of La Peña [*vide* Part I. Pl. III. fig. 1], and particularly towards the upper part of this barranco [*vide* Part I. Pl. IV. fig. 1]. In this dried-up water-course *Saxicola d. dacotiæ* was plentiful, but once the ascent to Betancuria had begun we saw no more of the Chats until we had crossed the dividing range and gained the plains. At Altigua I saw single young bird which had evidently been reared in the neighbourhood. None were seen near Puerto Cabras, but we again noticed them near the beach at Gran Tarajal.

From these notes it will be seen that these interesting Chats are now pretty well distributed over the island, but curiously enough they have, so far as we know, never yet crossed the dividing strait to Lanzarote. There is almost always a strong breeze blowing in the eastern islands, and as these small birds find such difficulty in battling with the wind, it is probable that this is the chief factor in confining their distribution to the one island. For some account of their habits see Part I. of this paper, pp. 47-8.

A good series was obtained from various parts of Fuerteventura.

Bill black ; iris dark hazel ; feet dark brown.

Saxicola dacotiæ murielæ. Muriel's Chat.

Saxicola dacotiæ murielæ Bannerman, Bull. B. O. C. vol. xxxiii. 1913, p. 37 ; id. Part I. Pl. IV. & pp. 74, 75, 76, 77, 84, 86.

This Chat is confined to the outlying islets of Montaña Clara and Allegranza. A full description and account of this interesting new subspecies is given in Part I. of this paper (*vide supra*).

A series was obtained in Montaña Clara and Allegranza showing several stages of plumage.

Bill black ; iris dark hazel ; legs black.

Hirundo rustica rustica. Swallow.

Hirundo rustica rustica Linn.; Bannerman, Part I. pp. 49, 86.

Swallows were seen on rare occasions only; they were first met with at La Peña on the west coast of Fuerteventura, where several were hawking over the fields of corn and maize. They do not breed in the islands but are seen annually on migration. At this time of year (May and June) they are fairly common in Gran Canaria.

A specimen was obtained in Fuerteventura.

Bill black; iris dark hazel; feet dark brown; the body was very fat; the testes small.

Delichon urbica urbica. House Martin.

Delichon urbica urbica (Linn.); Bannerman, Part I. pp. 55, 77, 86.

House Martins were not seen in Fuerteventura, but were almost the first species noted upon our landing in Lanzarote. A pair was flying over the small port of Tiñosa and one was obtained. It proved to belong to the European species and not, as I thought possible, to the smaller form *D. u. meridionalis* of north-west Africa. In the north of this island they were not seen, but a single bird was noticed flying high over the cliffs of Montaña Clara.

In Allegranza a small colony of Martins was discovered by my taxidermist; they are said to breed in the island, and certainly the birds were seen entering holes in the face of the cliff; unfortunately they were all inaccessible. Bishop estimated their numbers at about twenty birds. It is worthy of note that on a subsequent visit to this part of the island all signs of the House Martins had disappeared. Dr. Hartert (Vög. pal. Faun. i. p. 808) remarks that he considers the statement that the House Martin has bred in the Canary Islands rests on an error, and until more definite evidence is forthcoming I am inclined to agree with him. It certainly does not breed on Tenerife or Gran Canaria.

Examples were obtained from Lanzarote and Allegranza.

Bill black; iris dark hazel; legs feathered, claws dusky.

Micropus murinus brehmorum. Pale Swift.

Micropus murinus brehmorum Hart.; Bannerman, Part I. pp. 49, 51, 52, 53, 55, 56, 61, 77, 86, 88.

All the Swifts which we collected appeared to have extremely white throats. The Pale Swift is a migrant to the eastern Canary Islands, arriving, according to Polatzek, at the end of February and departing in September. This observer records it only as a bird of passage in Lanzarote but found it breeding in Fuerteventura, where Meade-Waldo also discovered a colony. I found these Swifts to be plentiful in the eastern group during May and June, but particularly so in Fuerteventura. Here, in the neighbourhood of Puerto Cabras, they were seen in numbers hawking over the plains; they were also met with throughout our journey in the island, being especially numerous at Toston, in the valley of La Peña, and at Antigua. I did not myself find any nests, but Swifts doubtless still breed plentifully in this island.

In Lanzarote they were much less common, and were only seen in any numbers at Tiñosa and once over the town of Haria. Single birds were noticed from time to time at various points on the route. They were not seen in Graciosa, but they were found on both the small islands of Montaña Clara and Allegranza, in the former of which they appeared to be breeding in the cliffs.

A series was obtained from Fuerteventura, Lanzarote, Montaña Clara, and Allegranza.

Bill black; iris dark hazel; feet purplish brown.

Micropus unicolor unicolor. Madeiran Black Swift.

Micropus unicolor unicolor (Jard.); Bannerman, Part I. pp. 49, 53, 88.

This little Swift was seen on several occasions in Fuerteventura, where it was not nearly so plentiful as the preceding species, being, in fact, quite rare. A few were recognised hawking with *M. m. brehmorum*, over the plains near Puerto Cabras in Fuerteventura. In Lanzarote they were not seen, but I should be much surprised if they do not nest in the

high cliffs below Monte Famara and on the precipice known as El Risco. Curiously enough, it was *M. m. brehmorum* and not this species which we found on the small islets. Undoubtedly the Black Swift breeds on the western islands, as on May the 1st I shot a specimen in Gran Canaria with well-developed eggs in the ovary. There is no reason why this bird should not breed in the eastern group, but up to the present there are no actual records of its having done so.

Several examples were obtained from Fuerteventura.

Bill black; iris dark hazel; feet purplish brown, rather more pink than in *M. m. brehmorum*.

Upupa epops epops. Hoopoe.

Upupa e. epops Linn.; Bannerman, Part I. pp. 43, 44, 46, 49, 50, 51, 52, 53, 54, 57, 59, 60, 65, 86.

Upupa epops pallida Erl.; Floericke, A. d. Heimat d. Kanarienvög. 1905, p. 32.

Upupa epops petrosa } Floericke, A. d. Heimat d. Kana-
Upupa epops pulchra } rienvög. 1905, p. 32.

Upupa epops fuerteventuræ Polatzek, Orn. Jahrb. 1903, p. 166.

The unfortunate Hoopoes found in the Canary Islands have been "split up" into a regular army of subspecies, as can be seen by the formidable list above! No species has been more confused, and the indiscriminate naming and splitting up of a bird of such migratory habits on the most meagre evidence is to be sincerely deplored.

I had, previously to setting out on my last expedition and while working on the "Birds of Gran Canaria," attempted to discriminate between the alleged forms without success. While in the eastern islands, therefore, I paid special attention to the Hoopoes, and collected examples from every locality visited in Fuerteventura and Lanzarote. With a series of twenty specimens obtained by myself in Gran Canaria and the eastern islands, together with a much larger number acquired from other sources, I have had ample material with which to thoroughly study the question.

Apparently Floericke is responsible for a good deal of the confusion which has arisen in the past with regard to the Hoopoe of the Canary Islands. In 1905 he described and named two new subspecies from Tenerife and Gran Canaria alone, besides apparently recognising *U. e. epops* and *U. e. pallida* Erl. as birds of passage occurring in the same islands! These forms he named (1) *U. e. petrosa*, and (2) *U. e. pulchra*.

Later Polatzek, turning his attention only to the Hoopoes from the eastern islands, recognised two forms: (a) From Fuerteventura, which he described and named *U. e. fuerteventuræ*, and (b) from Lanzarote, which he described but did not name, but which Thanner suggests should be named *U. e. lanzarotæ*. Polatzek also recognises *U. e. epops* from all the islands of the group.

We have, therefore, the astonishing number of six supposed distinct forms of *Upupa* in the Archipelago!

To deal first with the subspecies described by Floericke, form 1 may be dismissed as quite unworthy of consideration. Form 2, *U. e. pulchra*, is said to be "long-beaked, short-winged, and to be a bird of passage."

Form a, of Polatzek, named *U. e. fuerteventuræ*, is said to be distinguished from European and African examples by (1) its more vivid colouring, (2) its long beak, and (3) by its being a resident bird. Moreover, it is said to be a large species and to be a winter-breeding bird.

Von Thanner, who has paid special attention to this question, is much more moderate in his conclusions than either of the above-mentioned. This observer, who should be well acquainted with the Hoopoe in all the islands, recognises two forms, the typical *Upupa e. epops* and *Upupa e. pulchra* Floericke, with which he considers *U. e. fuerteventuræ* Polatzek to be synonymous. In this latter conclusion I do not agree with him, for one reason Polatzek notes that *U. e. fuerteventuræ* is a large bird, while *U. e. pulchra* is said to be "short-winged."

It will be seen therefore that both Polatzek and

von Thanner believe that the bird, which undoubtedly breeds in the winter months in Fuerteventura and on the coasts of Gran Canaria and Tenerife, is separable from the typical race.

A careful survey of the material before me led me at first to believe that Polatzek and von Thanner were right in this deduction. At first sight there certainly appeared to be two forms represented. Out of 20 birds collected in Tenerife, Gran Canaria, and the eastern islands in February, March, April, and May, eight specimens had the plumage of the upper parts distinctly more vinaceous than the remainder, with bills measuring 52-62 mm., collected in the same islands in the same four months of the year. The remaining twelve examples are much "duller" in general colouring, and their bills measure 52-60 mm., but the average length is distinctly shorter than in the first eight bright-coloured birds. Now is it possible that two perfectly distinct forms of *Upupa* should be found side by side in the same four islands at the same time of year, both of which breed in the islands, and in the eastern group at any rate are found living under exactly the same conditions? Personally, I do not consider it possible, and until very much more convincing arguments are forthcoming in favour of two distinct races in the Archipelago, I prefer to class all the Hoopoes under the one head—*Upupa epops epops* Linn. The bright colouring of the plumage exhibited in certain birds I consider to be largely seasonal. An examination of a large series of *U. e. epops* from other parts of the world shows that they are subject to great variation in colour as well as, to a certain extent, in the length of the bill, which latter discrepancy may possibly be accounted for by age. It would be interesting to learn the opinions on this subject of the several eminent foreign Ornithologists who have recently been working on the Avifauna of the Canary Islands.

The migrations of the Hoopoe in the Canary Archipelago are not very clearly understood, but it seems fairly evident that in the eastern islands some Hoopoes remain throughout

the year* and undoubtedly breed in the winter months (*cf.* Polatzek, *Orn. Jahrb.* 1908, p. 166, form *a*, which he calls *U. e. fuerteventuræ*). These resident birds are reinforced by large numbers from the African mainland in the spring. Polatzek has himself seen migrants arriving on the 29th March, but considers them to be a distinct race which, however, he does not name. These migrants I consider were *U. e. epops*, which in my opinion arrive in March and April, while the majority leave the islands in the autumn. A few remain through the winter, and owing to the mild climate on the low-lying eastern islands and on the coast of the mountainous western islands, breed in February and March.

Hoopoes were met with in every part of Fuerteventura and Lanzarote which we visited. They are almost the commonest birds to be seen, alike on the stony plains, in the villages, amongst cactus plantations, in the tamarisk valleys, in the hills, or on the coast.

In Graciosa, only one bird was seen, as also in Allegranza; both these were very wild—in this respect unlike those generally met with on the large islands, which showed no sign of fear.

We did not find any Hoopoes on Montaña Clara.

A nest, which was found on May the 15th at Antigua (Fuerteventura), contained five half-fledged young, between the largest and smallest of which an enormous difference in size existed. We kept them alive for some time and found that they thrive well on roasted gofio, and later on butterflies and caterpillars, which they ate greedily. I regret that they died one by one about a week after their return to Gran Canaria; they had meanwhile become exceedingly tame. This family is now in the British Museum.

A series was obtained from Fuerteventura and Lanzarote.

Bill dark horn; iris dark hazel; feet greyish brown.

* Von Thanner considers that the majority of winter-breeding birds leave the islands after nesting is finished. Polatzek, on the contrary, thought that this winter-breeding bird was resident, at any rate in the eastern group.

Tyto flammea gracilirostris. Slender-billed Barn-Owl.

Tyto f. gracilirostris Hartert ; Bannerman, Part I. pp. 61, 62, 84, 86.

The Eastern Canary Island Barn-Owl is an exceedingly rare species found on the islands of Fuerteventura, Lanzarote, and Allegranza.

The example from the last-named island is very dark in colouring, but in other respects is similar to those from the main islands, and it must be remembered that considerable variation in colour exists individually amongst the whole group of *Tyto flammea*. It is always a difficult question to determine how plentiful or otherwise birds such as this may be. Nocturnal species are usually credited with being "very rare" on account of their being so seldom met with in broad daylight! In the case of this particular species, however, I believe the report to be correct. In every village which we passed through I made diligent enquiries after Owls. The islanders all appeared to know the "Lechusa," as this species is called, but one and all affirmed that it was now much scarcer than in former years.

Specimens were obtained from Lanzarote and Allegranza.

Bill light horn-colour ; iris black ; feet dark buff, claws black.

Falco peregrinus pelegrinoides. Barbary Falcon.

Falco p. pelegrinoides Temm ; Bannerman, Part I. pp. 58, 61, 62, 77, 78, 82, ? 83.

Falco peregrinus pelegrinoides, Hartert, Vög. pa!. Faun. ii. p. 1051.

This grand bird—the *Falco barbarus* of former writers on the Canaries—was not seen until we reached Moutaña Clara. On this little island a pair was resident, and the birds were seen on several occasions (*vide* Part I. pp. 77–78). I again saw a single bird on the Roque del Oucste, which, however, was probably one of the pair from Moutaña Clara. On my return journey through Lanzarote I procured a fine specimen which had been shot while chasing the tame

pigeons in the little township of San Miguel de Teguisse, situated in the heart of the island.

An example was obtained from Lanzarote.

The soft parts were faded.

Falco eleonoræ. Eleonore Falcon.

Falco eleonoræ Gené ; Bannerman, Part I. pp. 55, 56, 61, 62, 89.

This bird was seen on two or three occasions during the trip. It was first noted in Lanzarote, where I obtained a fine example of an adult male which had been shot near Arrecife. It was probably a Falcon of this species which was seen twice on the way from Tiñosa to Yaiza. It is not a common bird but, according to Polatzek, at certain seasons of the year and in certain localities, it is sometimes fairly plentiful. I had a good view of one of these Falcons in the barranco of Gran Tarajal in Fuerteventura. June seems a very early month in which to find this Falcon in the Canary Islands. It is a regular migrant in August and September. Von Thanner records it as breeding on the Roque del Este. Certainly it was not this species which I saw on Montaña Clara, but *F. p. pelegrinoides*. Very probably both species frequent this deserted island.

An example was obtained in Lanzarote.

Tinnunculus tinnunculus dacotiæ. Fuerteventuran Kestrel.

Tinnunculus t. dacotiæ (Hartert) ; Bannerman, Part I. pp. 43, 49, 50, 53, 55, 56, 57, 61, 65, 78, 82, 86, 87, 88.

Falco tinnunculus dacotiæ Hartert, Vög. pal. Faun. ii. 1913, p. 1086.

Dr. Hartert recently described this Kestrel in his book on the 'Birds of the Palearctic Fauna.' It may be as well to give here a short summary of the characters which distinguish *T. t. dacotiæ* from *T. t. canariensis*.

In a series of 14 birds from the eastern Canary Islands (7 ♂, 7 ♀) compared with 14 birds from the western group (8 ♂, 6 ♀) we see that the adult males of *T. t. dacotiæ* have the spots on the mantle and wing-coverts smaller than

in male examples of *T. t. canariensis*, while in the latter species the spots almost appear as bars. In comparing females of the two races we find that *T. t. canariensis* is considerably more heavily barred on the entire upper parts and has a generally darker appearance than *T. t. dacotiæ*. In size *T. t. dacotiæ* is smaller, as can be seen by the appended wing-measurements :—

<i>T. t. dacotiæ.</i>	<i>T. t. canariensis.</i>	<i>T. t. dacotiæ.</i>	<i>T. t. canariensis.</i>
♂.	♂.	♀.	♀.
226 mm.	234 mm.	228 mm.	235 mm.
223 "	223 "	235 "	243 "
215 "	221 "	233 "	236 "
215 "	224 "	228 "	237 "
218 "	226 "	223 "	244 "
224 "	223 "	231 "	232 "
221 "	222 "	225 "	
	234 "		

I had myself collected a large series in the eastern islands, as I had suspected before leaving England that the form found in the desert eastern group could be separated from that found in the western islands. That my supposition was correct is proved by my finding on my return that Dr. Hartert had already described and named this geographical race, while engaged upon working through the Kestrels of the Palæarctic region for his book. The characters assigned to this subspecies are fully borne out by the series which I procured. While in the eastern Canary Islands I paid special attention to immature birds, and managed to secure examples of this Kestrel in almost every plumage, from the nestling in down to the fully adult bird. It is impossible to give a full description of the various phases of plumage which the young bird passes through, but it is evident that the down is cast last of all from the inner wing coverts and from the crown of the head. Anyone desiring further information on this point can examine the birds themselves, of which a complete set are now to be found in the National Collection.

The following immature specimens were procured:—

(a) 1 nestling in down, taken at La Peña (Fuerteventura) on May the 11th.

(b) 3 nestlings in down, taken on Isla Graciosa on June the 7th.

(c) 3 juv. partly in down, taken at Haria (Lanzarote), on June the 15th.

(d) 1 juv. in a still further advanced stage, taken at La Peña (Fuerteventura) on May the 12th.

The Fuerteventuran Kestrel is not confined to the island after which it has been named, but was met with in every one of the eastern group which we visited, even being seen on the Roque Inferno or West Rock. In Fuerteventura it is not really a very plentiful species, and in comparison with the numbers of *T. t. canariensis* in Gran Canaria, where it simply swarms, it may be termed almost scarce. It is, however, seen in or near almost every village, and a clump of palm trees is almost sure to attract one or more pairs. I therefore came to the conclusion that it was regularly but sparingly distributed over the island. Almost all the birds met with in Fuerteventura were rearing young at the time of my visit, and in consequence I only shot two adult examples there which I had reason to believe had finished breeding.

In Lanzarote, curiously enough, these Kestrels were much more abundant. The increase in their numbers was most apparent, and many young birds were seen on the wing. In the desolate country between Yaiza and the coast many Kestrels were noted, and they were equally plentiful in the cultivated district round Uga. We did not find them in anything like the numbers in which Kestrels appear in Gran Canaria until we reached the valley of Haria. Here for the first time they were really plentiful—as Hawks go—and on one occasion I watched nine birds hovering over a single field.

On the island of Graciosa Kestrels were fairly numerous—they breed on the western coast. On Montaña Clara only a very few were noticed, but on Allegranza they were quite common and are evidently resident there.

A large series was obtained from Fuerteventura, Lanzarote, Graciosa, and Allegranza.

Adult. Bill bluish horn, cere pale yellow ; iris dark hazel ; feet chrome yellow.

Juv. Bill pale bluish horn ; iris dark hazel ; feet pale yellow, claws black.

Buteo buteo insularum. Canarian Buzzard.

Buteo b. insularum Floericke ; Bannerman, Part I. pp. 50, 60, 65, 84, 86.

Buteo buteo lanzaroteæ Polatzek, Orn. Jahrb. 1903, p. 113.

The Buzzard from the eastern Canary Islands has been distinguished by Polatzek as *B. b. lanzaroteæ*. I have not myself compared a large series of adult birds from the eastern and western groups of the Canary Archipelago. Dr. Hartert, who has recently reviewed the Palæarctic forms, tells me that he does not consider the Buzzard found in the eastern Canary Islands can be separated from *Buteo b. insularum*, the race inhabiting the western islands.

The Buzzard is an exceedingly rare bird in Fuerteventura judging from my own experience, for in the course of the entire journey through this island it was only seen on one occasion—in a barranco between La Peña and Santa Maria de Betancuria. Both Polatzek and von Thanner found it scarce in Fuerteventura. In traversing Lanzarote from the south to the extreme north (see Map of Route, Part I. Plate II.) I did not meet with it until I reached the valley of Haria, where, however, one or two pairs were constantly in sight during the five days spent there.

The little island of Graciosa is now quite forsaken by the Buzzards, which Meade-Waldo found there in April, 1890. None were discovered on Montaña Clara, but on Allegranza it is interesting to note that three or four were seen in one crater, being doubtless resident in the island.

An immature example was procured in Allegranza.

Bill black, cere greenish yellow ; iris light hazel ; feet yellow.