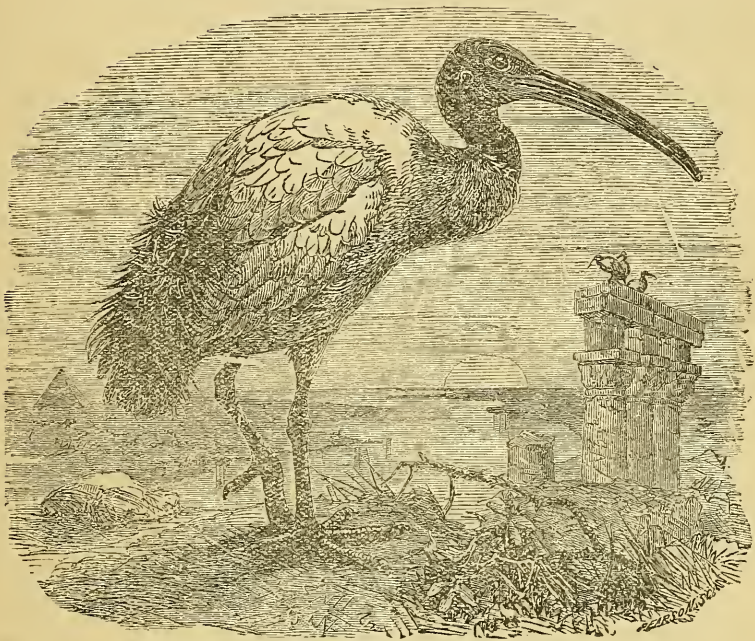


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TENTH SERIES.

Delectasti me, Domine, in operibus manuum tuarum.

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1914.

Leaving this locality—our last real camp—we made for Tshinshenda, and on the way saw two or three Pearl-spotted Owlets (*Glaucidium perlatum*), which I had not previously noted, and also a larger species which was probably referable to *Bubo maculosus*—“magungwi.” When we were at Kalonga one of our “boys” brought me a fledgeling Spotted Eagle-Owl.

Arriving back at Elisabethville before Christmas, I saw a Pin-tailed Widow-bird (*Vidua serena*) in town and also a blue Kingfisher, apparently similar to the birds met with near Mandoko and on the Escarpment, but with a black bill, and thus agreeing altogether with others which I came across on the Moushosi River.

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

(Plates II.–VI.*)

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(Part II, will contain an annotated list of the birds obtained, with systematic notes on each species.)

[THE Expedition undertaken by Mr. D. A. Bannerman to the eastern Canary Islands in the months of May and June last has considerably increased our knowledge of the avifauna,

* For explanation of the Plates see p. 90.

and has added to the National Collection a valuable series of birds in their breeding-plumage together with examples of their young and eggs. The birds in this group of islands are now strictly protected during the nesting-season, but, thanks to the intervention of Sir Edward Grey, the difficulties of obtaining a permit to collect were eventually overcome. The specimens thus obtained are therefore of very special value.

The Natural History Museum now possesses a very complete collection of birds from the Canary Islands, thanks to the work done by Mr. Bannerman and the generosity of Mr. E. G. B. Meade-Waldo. About twenty years ago the latter visited nearly all the islands in the group, making extensive collections, and the results of this work were published in 'The Ibis' between the years 1889 and 1893. He was the fortunate discoverer of several interesting new species, more especially two Blue Titmice, *Parus ombriosus* from Hierro and *P. palmensis* from Palma, likewise a very remarkable new Chat, *Saxicola dacotia*, from Fuerteventura; while his companion, the late Canon Tristram, described a fine new Chaffinch, *Fringilla palmæ*, from Palma. To Mr. Bannerman's credit lies the discovery on Allegranza and Montaña Clara of a second form of Chat which, though closely allied to the species from Fuerteventura, seems to be a well-characterized and quite distinct form.

During his expedition Mr. Bannerman was ably seconded by A. H. Bishop, who had been deputed by the Natural History Museum to accompany him.—W. R. O.-G.]

INTRODUCTION.

MR. E. G. B. MEADE-WALDO, writing in 'The Ibis' in 1890, concludes his excellent series of papers on the "Birds of the Canary Islands" with the following sentence:—"I am afraid that, with the exception of the Petrels, nothing much remains to be done; but to observe these satisfactorily, it would be necessary to visit and carefully work the outer islands and rocks during the months of June and July."

Since this was written, a great deal has been added to our knowledge of the avifauna of this group, but apparently no one has ever systematically worked the outlying islands.

With the intention, therefore, of thoroughly exploring these little-known islets and at the same time working through the large islands of Fuerteventura and Lanzarote, I left England on the 16th of April, 1913, for Gran Canaria. The expedition was undertaken officially on behalf of the British Museum, to the officers of which institution I am indebted for permitting me to make use of the services of A. H. Bishop as taxidermist.

The Hon. Walter Rothschild kindly contributed to the expedition on the understanding that part of the collections made should go to the Tring Museum.

The principal papers in the past, dealing with the eastern Canary Islands, have been contributed by Mr. Meade-Waldo, Herr Polatzek, and Herr von Thanner*.

On our arrival in Gran Canaria considerable and unforeseen difficulties arose. The Spanish Government, which had been approached by the Foreign Office on the subject, refused to allow me to proceed, but owing to the efforts of H.M.'s Consuls at Tenerife and Gran Canaria (Mr. Croker and Major Swanston) these difficulties were eventually overcome, and we left Las Palmas as originally arranged on the night of May the 4th.

I should like here to express my deep gratitude to His Majesty's Consuls, Mr. Croker and Major Swanston, for the innumerable services which they rendered to the Expedition; had it not been for their timely intervention we should most certainly have been forced to abandon our project altogether. Although, as far as our own plans were concerned, the attitude of the Spanish Government proved

* Meade-Waldo, *Ibis*, 1889, pp. 1-13, 503-520; 1890, pp. 429-438; 1893, pp. 185-207. Polatzek, *Orn. Jahrb.* 1908, pp. 81-119, 161-197; 1909, pp. 1-24, 117-134, 202-210. Von Thanner, *Nov. Zool.* 1904, pp. 230-234; *Orn. Jahrb.* 1903, pp. 211-217; 1905, pp. 50-66, 211-214; 1908, pp. 198-215; 1909, pp. 148-150; 1910, pp. 81-101, 226-229; 1912, pp. 221-228.

somewhat embarrassing, yet it is distinctly good news that the Spanish authorities have at last realised that birds need protection during the breeding-season, especially on islands such as the Canary group. If the Guardia Civiles, who are charged with the enforcement of the Act, would only carry their vigilance beyond the radius of the chief towns, they would be carrying out a more useful work than is at present the case.

I wish to render my best thanks to Mr. W. R. Ogilvie-Grant and Mr. C. E. Fagan, I.S.O., of the British Museum (Natural History), for the aid which they have given me in organising the Expedition. To Mr. E. G. B. Meade-Waldo I am deeply indebted for much useful advice, which proved invaluable throughout the trip. I was lucky in possessing a copy of his original private diary; I was thus enabled to compare, in the larger islands at any rate, the conditions of bird-life to-day with those existing twenty years ago when he himself did so much work in this group.

Lastly, I wish to say a word in praise of my taxidermist, A. H. Bishop, who carried out his work well and conscientiously and placed a most creditable number of skins to his account.

It must be understood that this paper merely deals with my own personal observations in the eastern Canary Islands. I have not, as in my previous paper ('Ibis,' 1912, p. 557), embodied the results arrived at by other ornithologists working on this group.

I landed at Las Palmas (Gran Canaria) on April the 22nd, and between that date and May the 4th a number of birds and eggs were collected in the neighbourhood of Las Palmas and in the small mountain village of Firgas. On our return from the eastern group, another week (June 18 to 23) was spent in Gran Canaria while waiting for a boat to take us to England. My notes on the birds of this island I have not included in the general account of the Expedition. They refer chiefly to the nidification of certain species, and will be included in the work on the birds of the entire group upon which I am at present engaged.

The following itinerary will serve as a guide to the route taken in the Islands and indicates clearly the base-camps from which collections were made.

Itinerary of the Expedition.

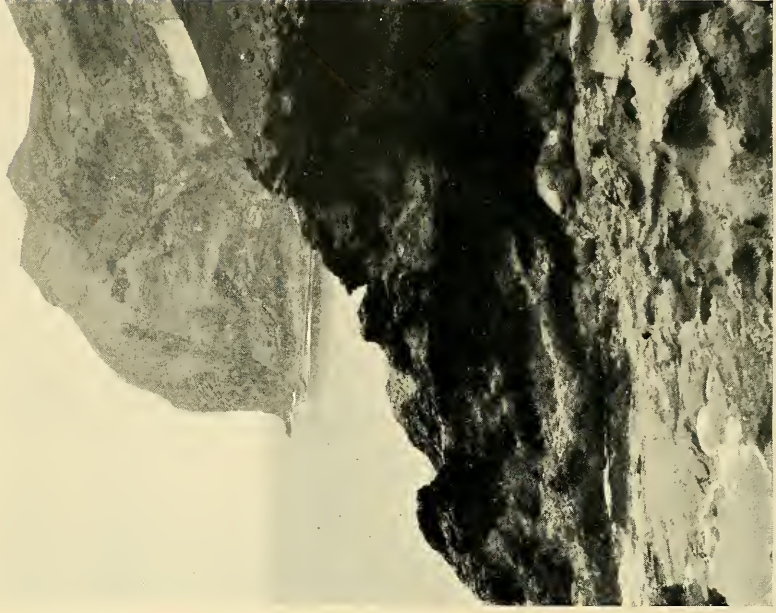
	Left	Las Palmas, Gran Canaria . . .	May 4th.
	Arrived	Puerto Cabras, Fuerteventura . .	May 5th.
	Camp 1.	Caldereta, Fuerteventura . . .	May 5th to 6th.
	" 2.	Toston, " . . .	May 6th to 10th.
	" 3.	La Peña, " . . .	May 10th to 14th.
	" 4.	Antigua, " . . .	May 14th to 16th.
	" 5.	Puerto Cabras, " . . .	May 16th to 18th.
	Arrived	Tiñosa, Lanzarote	May 19th.
	Camp 6.	Playa Januvio, Lanzarote . .	May 19th to 22nd.
	" 7.	San Miguel de Teguisse, " . .	May 22nd to 23rd.
	" 8.	Haria, Lanzarote	May 23rd to 27th.
	" 9.	Isla Graciosa	May 27th to June 7th.
Visited concur- rently.	}	10. Isla Montaña Clara	June 7th to 14th.
		(From which Camp the Roque del Oeste was visited on June 11th.)	
		" 11. Isla Allegranza	June 9th to 14th.
		" 12. Haria, Lanzarote	June 14th to 15th.
	" 13.	Arrecife, "	June 15th to 16th.
	Arrived	Puerto Cabras, Fuerteventura .	June 17th.
	"	Gran Tarajal, " . . .	June 17th.
	"	Las Palmas, Gran Canaria . . .	June 18th.

FUERTEVENTURA.

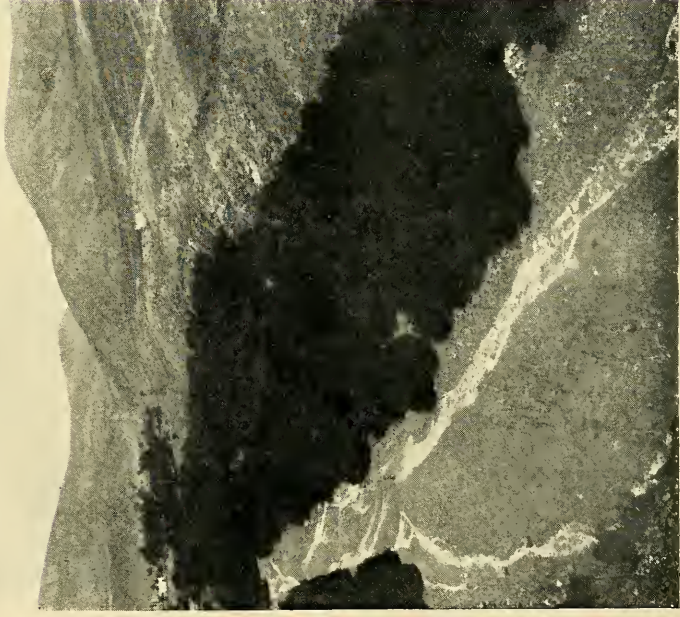
Early in the morning of May the 5th, the little steamer in which we had made the voyage from Las Palmas dropped anchor off Puerto Cabras, the principal town of Fuerteventura. She had previously touched at the small port of Gran Tarajal, some twenty miles further south, where we landed on our return journey*. Puerto Cabras is not by any means a beautiful village, but in the early morning light it possessed a certain picturesqueness with its square white houses built on the slope of a hill.

Camels are the beasts of burden in the eastern Canary Islands; indeed it is almost impossible to hire a mule for

* See p. 88.



2. NORTH-WEST CLIFFS OF MONTANA CLARA.



1. A TYPICAL TAMARISK VALLEY IN FUERTEVENTURA.

riding purposes, and, in consequence, progress when on the march is deplorably slow. Forced as we were to carry all food with us for such a long period, with tents, collecting-boxes, and personal baggage, our little cavalcade of seven camels created quite a stir as we streamed out of Puerto Cabras, taking the road to Oliva. For the first few miles the track lay parallel with the sea-shore—a low coast-line with stony beach upon which were seen Kentish Plovers and Turnstones. From the coast a flat barren plain stretches to a range of low hills running north and south, but with some quite high peaks amongst them. Indeed, I was surprised to find how mountainous the country appeared to be. Birds were remarkably scarce, short-toed Larks and a very few Pipits, a single pair of Kestrels and two Sandgrouse (the latter flying very high and at a great speed) were the only species noted. We soon left the coast behind, and as we turned inland began gradually to ascend.

A single flock of Coursers and a Shrike were seen. Just before reaching Caldereta we met with Meade-Waldo's Chat (*Saxicola d. dacotiae*) for the first time. We camped for the night at Caldereta (350 ft.), a small collection of farm buildings about an hour and a half's ride from Oliva. I found birds much more plentiful here—Hoopoes in numbers flying about the buildings and cactus plantations. Trumpeter Bullfinches came to the well of dirty water to drink, clinging on to the rough perpendicular walls with remarkable cleverness while they quenched their thirst. All were in very fine breeding-plumage. Young birds of the year in sandy-brown plumage were not uncommonly seen, while some old birds were still sitting on eggs. Short-toed Larks were very numerous, and the palm trees all appeared to be full of the nests of *Passer h. hispaniolensis*. In one case a pair of Kestrels were feeding young in the same palm where several Sparrows were nesting—a somewhat remarkable occurrence; but as the Kestrels in these islands seem to exist almost entirely on beetles and lizards, the fact is not so surprising as would appear. Two clutches of

Quails' eggs were brought in—one of nine, the other of five eggs.

In a pomegrauate tree behind the camp I found the nest of *Lanius excubitor kænigi* (from which the young had flown), composed of thickish sticks and bits of the prickly shrub *Launæa spinosa* and lined with rags, cotton, and camel's hair, a very untidy structure. An Egyptian Vulture, actually the first we had noted, came round the camp in the evening, after the birds' bodies which we threw away. On a plain covered with loose stones a pair of Thick-knees were evidently breeding. The female was remarkably tame and allowed us to approach quite close before flying a short distance away, where it stood and gazed at us.

We left Caldereta the following afternoon, intending if possible to reach Toston on the north-west coast before dark. The way led along the side of a range of hills with a wide deep valley on our right in which a fair crop of wheat had been cultivated. Before reaching Oliva we again met with *Saxicola d. dacotia*, all young birds of the year. Short-toed Larks were here extremely plentiful, but Berthelot's Pipits on the other hand were quite scarce. Passing over some sandy ground two small flocks of Coursers were seen, birds which I did not find by any means common along the route I followed until we reached the big plains in the centre of the island. We rode into Oliva very soon afterwards—a large village built on an utterly bare plain surrounded by hills, also entirely barren except where the ground had been terraced to enable the earth to be cultivated. To the north of the village a good deal of cactus has been planted, amongst which Hoopoes, Shrikes, and Linnets were noted. My attention was drawn to one Linnet having a brilliantly crimson breast, the others all being much paler than those subsequently met with in Lanzarote. The ride from Oliva to the coast was not particularly interesting, everywhere terribly barren but more hilly than I had expected to find it. Mile after mile the country was very much the same, and apart from Short-toed Larks and Hoopoes, birds were conspicuous by their absence.

As we neared the coast the ground became more sandy, and a few Coursers were seen. We crossed several dry water-courses which appeared like wide cracks in the earth, zigzagging to the sea, and then over rising ground between hills, from the summit of which we looked down upon a large, absolutely flat plain stretching to the sea. Toston, a tiny village noted for its lime-quarries, is perched on the top of the cliffs, and to the north could be made out the fine lava reefs on which we hoped to find the rare Black Oystercatcher (*Hematopus niger meadewaldoi*). The camels soon crossed the intervening plain, where more Coursers were seen, and I selected our camping ground some way from the village under the shelter of an old Spanish tower and within a stone's throw of the edge of the cliff.

Four days were spent in this camp (May 6-10) and a very thorough survey made of the district, especially the coast-line and reefs, of which a short description may be of interest before proceeding to the birds found thereon.

The main reefs stretch from Toston village to beyond the lighthouse—a distance of some two miles, and are well exposed at low tide, running out horizontally to the coast. They are composed almost entirely of black basaltic lava much worn by the action of the waves. The foreshore is also made up of huge lumps of this lava, often a good stride between each block. Beyond the lava a stretch of hard sand merges into the sand-dunes, with are covered sparingly, but more or less universally, with the same four plants which we met with everywhere.

In these sandhills many Kentish Plovers were breeding, but I did not discover any Terns here, although it would be hard to imagine a more suitable spot. Larks and Pipits as usual were found in small numbers. The belt of sandhills is succeeded by a wide plain which stretches to a low range of hills, absolutely barren in their entire extent and all curiously rounded and undulating. Few birds were seen on this plain, which was covered with small loose stones and an occasional desert plant, among which *Ononis ramosissima* Desf. and *Euphorbia paralias* L. were recognised.

Coursers, already mentioned, many Hoopoes, which seem to be absolutely at home in these barren wastes, Short-toed Larks and Berthelot's Pipits in small numbers, a Shrike or two, and an occasional flock of Rock Doves, feeding on the miserable patches of corn, completed the list.

The reefs proved more interesting, and considerable numbers of Waders were observed. The Oystercatcher, however, was not to be found, and I learnt from the lighthouse keeper, who knew the bird well by sight, that he had never seen it on this part of the coast. Kentish Plovers were literally in hundreds and breeding in the sandhills; Turnstones were in flocks, many in beautiful full breeding-plumage, although with the testes quite undeveloped; a pair of Grey Plover also in full breeding-plumage, a few Common Sandpipers and Dunlins, together with Redshanks, Ringed Plovers, and a single Heron, were noted. Whimbrels were numerous, and I distinctly heard a Curlew.

This list comprises the Waders usually met with in the eastern Canary Islands at this season. Many others doubtless touch here on migration, but with the exception of Sanderlings, which sometimes are quite common, they are mostly stragglers to this group.

We struck camp early in the morning of the 10th as we intended, if all went well, to sail from Toston to La Peña, 21½ statute miles down the coast, where we were assured that a landing could be effected. A sail of 4½ hours brought us to Punta de la Peña, where we ourselves landed with great difficulty by jumping on to the side of the cliff. A stiff climb brought us to the summit, while our two boats rounded the headland in order to land our baggage in the sandy cove. A huge swell was breaking here and one of the boats capsized, throwing everything into the water; the other was with difficulty run ashore, and the work of transporting our various semi-soaked belongings up the Tamarisk valley begun. Our camp was pitched about a mile from the sea under some magnificent date-palms on the estate of Don Pedro Menrique. Fresh water was here in abundance, and as a result a splendid crop of wheat and maize had been

cultivated. The Barranco de la Peña (Plate III. fig. 1) is closely overgrown with Tamarisk scrub, and in the distance the clump of palms can be seen under which our camp was pitched. I had intended only to remain for one night, but I soon found that birds of all descriptions were so plentiful in this valley that four days would be well spent here. It was in this barranco that we first met with the Fuerteventuran Blue Titmouse (*Parus c. degener*), which we found to be quite plentiful, frequenting especially the fig trees and tamarisks.

According to Polatzek, nesting commences at the end of February, and we saw a number of birds of the year in company with the old ones. Von Thaurer has also seen adults feeding young on the 3rd of March.

The distribution of this Blue Tit is peculiar. One may travel for many miles without meeting with any at all, when on entering a certain district they will suddenly become quite plentiful. After leaving La Peña I never saw them again in Fuerteventura: they have, however, been recorded from several other parts of the island by other naturalists, and of course there are many places which I did not have time to visit. Another species here met with for the first time was the Sardinian Warbler (*Sylvia melanocephala leucogastra*). These birds were most plentiful amongst the tamarisk bushes, in which they were extraordinarily difficult to locate. Their note always betrayed them, however, and if you sat still in the middle of the scrub several would soon show themselves. I noticed that the hens seemed to be much more in evidence than the cocks; they had apparently only just finished nesting, as I found several recently vacated nests. These were usually placed in the fork of a tamarisk about four feet from the ground, and a variety of materials was used in their construction: thin sticks, dried grass, camel's hair, and bloom of the tamarisk, with often a lining of goat's hair.

One of the most plentiful species in this valley was Meadewaldo's Chat (*Saxicola d. dacotiae*). These birds frequented the tamarisks which lined the dry bed of the barranco,

especially just above our camp. A photograph is given of this barranco showing the type of country they seemed to prefer (Plate IV. fig. 1). Water, though rather salt, was abundant, and according to Herr von Thanner is essential to their place of abode. Polatzek, on the other hand, found them sometimes in waterless tracts of country. I seldom saw them on the ground for long, but they would sit on a bough of tamarisk, much as our Flycatcher sits at home, and only occasionally dart out to catch some insect or else fly on to a stone in the middle of the barranco, where they would sit jerking their tails up and down after the manner of a Redstart. They had all long since finished breeding, and in consequence young birds in the speckled plumage were more in evidence than the adults. They lay their eggs, according to Messrs. Polatzek and von Thanner, very early in the year—a bird having been taken on January the 15th in which was found an egg ready for extrusion. The principal breeding-time, however, appears to be March and April. Such a complete account of the nesting of this species is given by the above authorities in their papers, published in the 'Ornithologische Jahrbuch,' that anyone desiring more information on this point cannot do better than consult their works. I have placed my notes on the present distribution of this Chat under the separate heading *Saxicola d. dacotiæ* in the list given in Part ii. of this paper to appear in the April number of 'The Ibis.'

Many other birds inhabited this fertile barranco. Goldfinches were met with for the first time and were common. Brown Linnets, the males with *crimson* breasts, were also plentiful and seemed to have a particular liking for the prickly pear. They were breeding at the time of our visit and several nests were found; one, containing four eggs, was composed of dry grass, corn-stalks, a plant something like raw cotton, a few feathers, and lined thickly with a species of silky thistle. Turtle-Doves cooed on every side, and were just then nesting in the palms and tamarisk scrub; I found a nest in one of the latter bushes containing two eggs which had only just been laid. A pair of Shrikes



1. THE HOME OF *Saxicola dacotiae dacotiae*. A BARRANCO ON THE WEST COAST OF FUERTEVENTURA.



2. MONTANA CLARA, ROQUE DE L'OUESTE, AND ALLEGGRANZA, SHOWING GRACIOSA IN FOREGROUND.

(*Lanius l. kœnigi*) was often seen in the dry bed of the barranco, and both Berthelot's Pipits and Short-toed Larks were found sparingly. Hoopoes were very numerous and the noisy Spanish Sparrows simply swarmed, and were again found nesting in the same palm as a pair of fine Kestrels, belonging to a new subspecies recently named by Dr. Ernst Hartert.

In another barranco not far from this camp, I was shown the nest of a Kestrel built in a hole on the steep face of the cliff. By carefully climbing along a ledge, about 40 feet from the top, I was enabled to reach this nest, from which a single young bird had been taken and brought in to me by a small Spanish boy earlier in the day. This young Kestrel, which was still in down, contained one whole lizard and half a lizard, one mouse (entire), and a quantity of beetles. The nest smelt very strong and many remains lay about in all directions. Further along the cliff a huge nest had been built under an overhanging ledge of rock in a sheltered position, in which a pair of Ravens had recently reared their young. This nest was built of large dried sticks and lined with smaller ones, amongst which pieces of rag and what appeared to be lumps of clotted camel's hair had been woven.

Between this barranco and the valley in which our camp was situated lay an extensive stone plateau, on which Sand-Grouse (*Pterocles arenarius*) were said to be often found.

In the evenings, Swifts (*Micropus m. brehmorum*) and an occasional Swallow used to hawk over the corn and maize, screaming loudly in concert as they darted amongst the trunks of the trees which bordered the field. Another Swift (*Micropus u. unicolor*) was sometimes seen nearer the coast, but always flying very high out of gunshot. I have seldom seen these two species in company.

While staying at this camp several Bats were shot which proved to be all of one species, *Pipistrellus kuhlii*. They only came out just before darkness fell and were thus very hard to obtain. Bats are distinctly rare in the eastern Canary Islands. Curiously enough the same species was obtained

on the high ground of Gran Canaria, while *P. savii* was found in the neighbourhood of Las Palmas on the coast.

We left this delightful spot on May the 14th to cross the range of mountains to Antigua, which is situated on the huge plain in the centre of the island.

The path led over the spur and for some distance ran along a dried-up water-course between undulating barren hills which rose from three to four hundred feet on either side. As we advanced, the bed of the water-course rose steadily and the sides of the barranco became steeper and more rocky. Many roosting-places of Vultures were to be seen here, and I noticed a Buzzard hovering above our heads, almost the only one I saw while in Fuerteventura. The camels plodded on bravely, making very good progress until we had ascended 900 feet, when the country became much greener and the hillsides were covered with plants and grasses. A Shrike was seen here and several flocks of Trumpeter Bullfinches, but these were practically the only species met with. At 1350 feet we passed over a plateau sown with wheat, where Short-toed Larks became abundant. Wherever corn is cultivated *on high ground*, these little Larks are to be found. Having crossed this plateau we began quickly to descend to Santa Maria de Betancuria—a tiny old-world Spanish village hidden away in the mountains, a place of great historical interest, the original capital of the island in the 12th century and celebrated for its ancient monastery. Hoopoes, Sparrows, and Kestrels were noticed here.

After resting our camels for half an hour we left the village for the last part of the journey, climbing steadily upwards until we reached the summit of the range separating the eastern from the western side of the island. We passed over this ridge at 1900 feet, and from here obtained the most extensive views in every direction. The sea was visible to the east and west, and far down below was spread an immense plain bounded by hills on all sides.

In this expanse the villages of Casillas de Morales, Antigua, Triquibijate, and Casillas del Angel, with their scattered

white houses, were plainly visible. On the southern side a low range of hills separates this country from an even larger plain, where the villages of Triscaminita, Tuineje, and La Florida are situated, which district Mr. Meade-Waldo made his centre of activity.

The town of Puerto Cabras, where we had landed, lay behind a range of hills fringing the coast, and away to the north another huge plain was visible, for the most part very barren save in the immediate neighbourhood of a few straggling villages and farms, where palms and fig-trees stood out above the grain-fields. From the summit of the pass where we had halted to rest the camels, the path wound over the bare mountain-side and over a part of the plain to Antigua. We passed through the village and pitched our camp on the further side. Hoopoes seemed more plentiful than ever and Pale Swifts were hawking over the fields in numbers. In the evening Coursers were seen close to the camp, and we obtained several in the spotted plumage of the immature birds; Sand-Grouse were also heard. The following morning, May the 15th, we were awakened by the musical call of the Hoopoes, "Ta-bo-bo-bo, Ta-bo-bo-bo," on all sides. On account of this cry they have received the local name of "Tabobo."

I had planned to spend the days on the plains and hoped to meet with Coursers, Sand-Grouse, and especially the Bustard (*Chlamydotis undulata fuerteventuræ*), which I had not yet come across. For this purpose, therefore, I hired a donkey and set out in the direction of Casillas de Morales, for it is almost impossible to approach the Bustard on foot. We had gone a long way before one was sprung, and although I knew the bird well in the skin, I was greatly surprised at its large expanse of wing. It only flew about a hundred yards and then alighted, watching to see if it was being followed. The donkey scrambled over the stony plain as fast as possible, but when within fifty yards the bird began to run and kept this distance between us until it finally took to flight again. The prickly "*Ahuloga*" bush, spoken of by Mr. Meade-Waldo, was here very plentiful and was covered with many snails, upon which

the Bustard feeds. From accounts which I received in this district it appears that this fine bird is not nearly so common as in former years, although it may be still fairly plentiful on the plains round Tuineje. After leaving the Bustard we went to look at a spot where a pair of Sand-Grouse (*Pterocles arenarius*) had had their nest. The eggs had already been brought in to my camp. They had been laid within the shelter of a ring of stones, where the earth appeared to have been slightly hollowed and a few pieces of dried grass scratched together. The birds were still close to the spot, and rose as we approached. Curiously enough I did not see any Coursers on this part of the plain. They seem to keep to circumscribed areas where the stones are smaller and the soil more sandy, often close to where corn has been sown. I found the neat cup-shaped nest of a Trumpeter Bullfinch built under a large stone; it contained four fresh eggs. Short-toed Larks swarmed, and with Hoopoes seemed to be the only other inhabitants of the plain. Round the camp at Antigua, Berthelot's Pipits were very common, and Desert Bullfinches, Short-toed Larks, Hoopoes, and Pale Swifts could be seen and heard in every direction. I also watched for some time a pair of Shrikes and a young *Saxicola d. dacotiæ*, the latter had evidently been reared in the neighbourhood and was ridiculously tame.

While we were in this camp numbers of eggs, and young birds all in more or less interesting stages of plumage, were brought in; the eggs chiefly belonged to such species as *Erythrospiza g. amantum*, *Anthus b. bertheloti*, *Calandrella m. polatzeki*, *Acanthis c. harterti*, *Pterocles arenarius*, and *Cursorius g. gallicus*. The young of all the above species were obtained here, with the exception of the Sand-Grouse, added to which several young Hoopoes in varying stages of plumage were collected. Those from the same nest differed greatly in size.

We left Antigua on May the 16th, travelling by the only road in Fuerteventura, on the last stage of our journey in this island. We passed through Cuyenta and Casillas del Angel over two large plains separated by undulating burnt-up

country, with hardly a sign of bird-life save the ever present Short-toed Larks, Hoopoes, and a few Shrikes. I had not seen very many Shrikes so far, and none in the sandy plumage which Mr. Meade-Waldo mentions, although several which I shot appeared to be moulting out of rather sandy-coloured feathers into the grey of the adult freshly-moulted bird. At midday we arrived on the plateau immediately above Puerto Cabras, and pitched our camp on some private ground close to a farm. Here we repacked our Fuerteventuran collection for my wife to take back to Las Palmas the following day, while we waited for the little interinsular boat to take us to Lanzarote. The collection from Fuerteventura numbered 123 birds, 93 eggs, 4 bats, 2 hedgehogs, and a rabbit, besides a fair series of botanical and entomological specimens. As we had twenty-four hours to spend before our boat came in, we employed the time in collecting in the neighbourhood. Swifts are very common here, and a number were obtained both of *Micropus murinus brehmorum* and *M. u. unicolor*. The former now had all very white throats. I was anxious to see if they were breeding in the same place along the coast as Mr. Meade-Waldo had found them on April the 1st, 1888, so, with this object in view, I followed the coast-line for some distance south of Puerto Cabras. Waders were very scarce, only Kentish Plovers and Turnstones being seen—many of the latter in full breeding-plumage. *Larus cachinnans* was common, but I did not see a single example of *Larus fuscus affinis*.

I found the cliffs which Mr. Meade-Waldo spoke of in his paper, just as he described them. They appeared to be formed of a kind of hard sandstone and were full of holes which looked as if they had been made by the action of water, so even were they. Certainly they are not now used as nesting-places by the Pale Swift. Only one hole appeared to be occupied, and this was considerably larger than the majority and was, I think, inhabited by a Kestrel. The coast to the south of Puerto Cabras is very rocky. Immediately beyond the cliffs mentioned above lies a sandy cove bordered by sand-dunes which are closely overgrown with a curious Euphorbia-like plant.

Pipits were common here, and as we turned inland and passed over the plain, Trumpeter Bullfinches and Short-toed Larks became extraordinarily abundant. Coursers were very scarce, but Sand-Grouse, on the contrary, were plentiful. Parts of the plain appeared like a sheet of purple caused by the *Suaeda fruticosa* Forsk. being in full bloom, and with the dark undulating hills in the distance a fine scenic effect was produced. The only other species met with were Hoopoes, Shrikes, and Spanish Sparrows, which latter rose in clouds from a field of grain.

The following morning I went out very early to try to shoot some Sand-Grouse—an old farmer showed me the best place to lie up for them—and built a circular butt of big stones round me, leaving three loop-holes through which the muzzle of the gun could be pushed. This butt was placed close to where the birds were wont to drink at a running açequia. Two and a half hours were spent in this butt with a certain amount of success. The “gangas,” as the natives call them, are very shy birds through being continually shot at, and notice the slightest movement, hence it is necessary to keep perfectly motionless in the butt. They begin flying at about 7 A.M., but most of them are late drinkers, and I found they came chiefly between 9 and 9.30, although many were as late as 9.45 A.M. The Black-breasted Sand-Grouse come flying very fast, uttering their pretty liquid call which sounds like bubbling water—they circle round once or twice and then settle about forty yards from the açequia, looking round carefully to see if they are observed. When satisfied that no danger threatens them they approach the water’s edge in a series of short runs, the head close to the ground and ever on the look-out. When the water is reached they drink greedily, and it is now that the native sportsman chooses to fire, when three or four are often bagged at a single shot. Sometimes as many as eight or ten together in a flock will arrive, but often a pair only would come to drink.

The remainder of the day (May the 18th) was spent in completing my map and diary and in preparing for the journey

to Lanzarote. The last tent was taken down after dinner by the light of the moon, and at 9 o'clock we boarded the little steamer and said goodbye to Fuerteventura. It was a calm and beautiful night, the sea like glass, and a full moon overhead made even Puerto Cabras look distinctly attractive as viewed from our moorings in the harbour.

LANZAROTE.

At 5 A.M. on the morning of May the 19th we dropped anchor off the tiny port of Tiñosa, situated on the south-east coast of Lanzarote. Here we were delayed for a very considerable time haggling over the price of camels, but at last our difficulties were overcome and we left the coast at 11 A.M. While waiting in Tiñosa, which is noted for the quantities of onions which are exported from there, I had plenty of time to note all the birds in the neighbourhood. Several Yellow-legged Herring-Gulls were basking on the rocks and were very tame. Swifts (*Micropus m. brehmorum*) were plentiful, and I noticed two House-Martins amongst them. A fine pair of Kestrels was hovering over the hillside but I failed to obtain them; the male was a particularly old bird. My intention was, if possible, to cross Lanzarote and camp close to the only lake found in the islands, which lies on the south-west coast, and is salt. The first part of the journey led up a steep incline from Tiñosa on to a terribly dry plateau. The cultivated soil seemed to consist entirely of powdered lava, the boundary walls being built of huge lumps of the same material. In these "fields" stunted maize and cactus struggled for existence, and in every other available patch wheat had been planted. Brown Linnets, Pipits, and Kestrels were the commonest birds seen here; and a fine dark Falcon, which I imagine to have been *Falco eleonora*, dashed past, almost black in colour and with narrow pointed wings. Having crossed this plateau we ascended by a bad path to the Carreterra, which we found to be a really good road evidently rarely used by wheeled vehicles. To the north, towards Arrecife, the land

slopes gradually from the central range of mountains to the sea, and seems to be thickly populated and to have every inch under cultivation. The mountains, which we were approaching, appeared as a large chain of craters running N.E. and S.W., falling at their western extremity due south and culminating in the conspicuous *Montaña de la Hacha Grande*, which rises to 1860 feet.

We passed through a depression in this range, leaving a huge moon-shaped crater on our left, and then entered the most fertile country I had yet seen in either of the large eastern islands. The road wound through vineyards and fields of maize and wheat which were planted everywhere with fig-trees and palms. Although the earth seemed still to consist of cinders, the crops on all sides looked highly prosperous. Birds at once became more numerous, Spanish Sparrows, Linnets, Trumpeter Bullfinches, Pipits, Short-toed Larks, Pale Swifts, Kestrels, and Egyptian Vultures being seen. Another Falcon was noticed just before passing through the mountains. We soon neared the village of Uga, behind which lies a group of huge craters, including the famous *Montaña del Fuego*. From these volcanoes an enormous lava-flow several miles in breadth stretches to the sea. Huge blocks of lava are thrown and heaped one upon another without a vestige of green to vary the monotony. This lava was as sharp as a knife and boots were simply ripped off our feet. The character of the country from Uga to Yaiza, where we changed camels, is much the same, but from the latter village to the coast a great difference is noticeable. Fertile fields and vineyards give way to the most utterly barren waste of country it has ever been my lot to cross. On our right was the huge lava-stream of almost coal-black lava with the bare craters rising behind. On our left dried-up, undulating ground, sown with an occasional patch of very thin grain. The only birds which seemed to be at all plentiful were Kestrels, which with Pipits and Trumpeter Bullfinches appeared to have the entire waste to themselves. I noticed that Short-toed Larks were entirely absent. At length the path, which had been running

between high walls of lava, led out on to a flat tableland, where a flock of Coursers and some Hoopoes were seen. After speedily crossing this we found ourselves looking down some 50 feet on to the Lago Januvio—a small expanse of water having a shore-line two miles in length, which is separated from the sea by a strip of beach composed of lava, ground almost to dust by the continued pounding of the surf. Our tents were pitched in this natural basin within fifty yards of the lake, after a very long and fatiguing day.

The following morning was spent in exploring the lake and neighbourhood: my fears of the previous night were only too well founded. Ornithologically the locality proved most disappointing. Kentish Plovers, as usual, were breeding close to the lake, and round the water's edge Dunlins and a huge flock of Turnstones were feeding. We walked right round the lake without seeing anything of further interest. On the lava-flow, which continues into the sea, a yellow Finch was seen—a straggler, doubtless, from the African mainland; brown Linnets were also quite common, and several Kestrels were noticed. As the "Lago" did not yield anything of interest we ascended to the plateau above, where Coursers, Shrikes, Hoopoes, and Pipits were procured; many of the Coursers were birds of the year. Bishop woke me next morning to say that there was a flock of Grebes on the lake: a close inspection through glasses pointed to their being the Black-necked Grebe (*Podiceps n. nigricollis*), but we were unable to shoot a specimen before they flew over the dividing bank out to sea. The weather was boisterous, and they had evidently come in to shelter on the calm water. A plentiful species in North Africa, these Grebes are very rare stragglers to the Canary Islands. They have been recorded on one occasion at any rate from the Azores.

Rare and peculiar birds are evidently occasionally seen on Lago Januvio by the fishermen, who remembered and described to me a bird which could only have been a Flamingo. The occurrence of this species on the lake has, I believe, been recorded before, but I cannot find the reference.

The afternoon of May the 21st was spent in collecting in the neighbourhood of Yaiza and Uga, and besides the species already mentioned from these localities, Ravens and Vultures were noted, and on the ride to the villages a pair of Thick-knees was flushed. Butterflies were abundant in the fields of tomatoes; Painted Ladies, Bath Whites, Red Admirals, Clouded Yellows, and Little Blues being the commonest kinds met with. I determined to leave our present camp early on the following morning, as it would have been only a waste of precious time to remain here a day longer. Accordingly on May the 22nd we started, on what proved to be our longest march, from the Lago Januvio to San Miguel de Teguisse, via Arrecife, 23 miles as the crow flies. The first part of the route was over the same ground as we had traversed on the outward journey, as far as the bridle path leading from Tiñosa. Thence we rode over miles of uninteresting plain, the ground gradually ascending to 700 feet, when we arrived at the village of Tias. Short-toed Larks again became plentiful; they seem to stick to the cornfields, as none were noticed between Yaiza and Playa Januvio. From Tias the first view of Arrecife is gained—over an immense wind-swept plain without a tree or blade of grass; the only birds of interest observed on this plain were two Collared Pratincoles (*Glareola p. pratincola*). These are very rare visitors to the islands; both were obtained, and proved to be a male and female with testes and ovary small. Finding that we could not stay in Arrecife, we pushed on to Teguisse, 900 feet above the sea, the road rising all the way over extremely barren country. As we did not reach our destination until darkness had fallen, we were obliged to put up our tents in the middle of the town itself, much to the astonishment of the inhabitants on the following morning. It was from Teguisse that I afterwards procured a fine example of *Falco peregrinus peygrinoides** from a Spanish ornithologist, who assured me that it had been shot while chasing the tame pigeons in the town. A night was spent here, and

* *Falco barbarus* auct. cf. Hartert, Vög. pal. Fauna, ii. p. 1051.

early on the 23rd of May we left for Haria, a ride full of interest from start to finish. Leaving the old castle of Santa Barbara on our right, we ascended quickly through land which was all carefully cultivated. Hoopoes, Brown Linnets (the males with very crimson breasts), Short-toed Larks, Sparrows, and Pipits were all numerous, especially in the neighbourhood of San Sebastian, which lies at 1000 feet. Figs and palms were now left behind, and at 1900 feet a plateau was reached which was shrouded in thick driving mist. Wheat and beans were growing here, and to my surprise the note of the Corn-Bunting was heard and the bird eventually procured. This is a migratory species to the eastern Canary Islands but is resident on the western Islands. Polatzek says that it returns to Fuerteventura and Lanzarote in the spring, and he has taken the eggs in the former island in March and April. I myself received a clutch from Tuineje in Fuerteventura on my return to Gran Canaria. Curiously enough the specimen shot on this high plateau was the only one I saw throughout my journey. Perhaps these birds do not generally arrive in the eastern islands until later in the year. Polatzek does not give a very definite time for their arrival and departure.

Monte Famara (2244 feet), the highest peak in Lanzarote, lay immediately to our left, the crest obscured by clouds. A fine view of the north of the island was obtained from the summit of the zigzagging road which led down to Haria. We camped about a mile outside the town on the south side, in the most fertile district imaginable, teeming with bird-life. The change from desolate hills and barren plains to this green, well-watered valley, proved very pleasant, and we decided to spend five days at this camp before moving on to explore the northern islets. Many birds were met with for the first time, and indeed I believe several species are confined entirely to this neighbourhood. By glancing at the accompanying map (Plate II.) it will be seen that Haria, a fair-sized but rather "scattered" town, is situated in a valley which is isolated from the rest of the island, surrounded as it is on all sides by hills, and directly cut off from the south

by the Famara range over which we had passed. Water is plentiful and in consequence vegetation abundant, mulberry and fig trees, date-palms, cactus-plants, and cereals growing in profusion. To deal first with the species which seemed to be confined to the district, the most plentiful was undoubtedly the Pale Titmouse (*Parus c. degener*); these little birds had full-fledged young on the wing. I found them towards Arrieta up to 1300 feet, climbing about amongst the rocks. Two Chiffchaffs (*Phylloscopus e. exul*) were procured, and one or two others heard. They are very difficult to locate. Spectacled Warblers (*Sylvia c. bella*) were by no means rare; I should think they are on the increase in this valley, but I did not meet with them anywhere else. Turtle-Doves (*Streptopelia t. turtur*), though rare, were evidently found here, as a man brought me two unfledged young from a neighbouring village. I kept them alive and brought them up on gofio, upon which they thrive and became very tame. Eventually, after many adventures, they arrived in Gran Canaria, where they still are. During our many moves they never attempted to fly away but would come in and out of my tent, perching even on my hat if nothing better were at hand! The commoner species found here were Hoopoes, Pipits, Spanish Sparrows, Shrikes, and Linnets; the latter, together with the Fuerteventuran Linnet, I have separated from the form found in the western islands, under the name *Acanthis cannabina harterti* (vide Bull. B. O. C. xxxiii. 1913, p. 39). The males of all the Linnets found here had exceptionally crimson breasts, although this is not a character by which they can be distinguished. A fine series was obtained, together with eggs and young birds. Two pairs of Buzzards (*Buteo b. insularum*) haunted the higher peaks, and could often be seen wheeling and screaming high up the barranco west of the camp. By following this barranco for a mile, one suddenly came upon the precipitous cliffs which bound the north-west coast, dropping sheer to the sea 1400 feet. The most extensive views were obtained from this point, and a complete panorama of the flat sandy plain which takes up so much of this part of the island was unfolded. To the

north lay the islands of Graciosa, Montaña Clara, Roque del Oeste, and Allegranza, seeming from this elevation to be only a stone's throw away. Three or four pairs of Ravens and many Kestrels lived in these cliffs, and doubtless Egyptian Vultures, Ospreys, and Barbary Falcons had their eyries close at hand. Polatzek found the latter species breeding here and speaks of it in his excellent paper. Rock Pigeons swarmed, and far down below many Herring Gulls (*Larus cachimans*) were congregated on a ledge upon which it is highly probable they had nested earlier in the year.

An ancient Spanish goatherd told me that he had recently pulled out two White Owls (*Tyto flammea gracilirostris*) from this same cliff, but I had not the luck to fall in with them myself.

I was informed that "Pardelas," i. e. *Puffinus kuhli flavirostris*, nested lower down at the foot of the "Risco," where, however, I was unable to descend in the short time at my disposal. It would be highly interesting to learn if any other species of Petrel has ever been found breeding in Lanzarote. It was near here that Polatzek saw many Eleonore Falcons (*Falco eleonoræ*) in late August. I did not, however, meet with any in this district. Near the town of Haria, Thick-knees were heard every evening. A clutch of eggs was taken on May the 26th, and exceptionally beautiful eggs they were. Curiously enough Swifts were not seen until the morning that we prepared to leave. These were all *Micropus m. brehmorum*. The nights spent at Haria were very cold, the clouds creeping down the mountains and almost enveloping the camp, accompanied usually by a high wind which sprang up about five o'clock. While in this camp I had the pleasure of receiving a visit from Dr. Böttger, an eminent German naturalist, who was making a complete tour of the archipelago. He was on his way south from the northern islets, and had been accompanied part of the time by Herr von Thanner. He gave me the bad news that this ornithologist had been taken seriously ill in Allegranza, and been forced very shortly after his arrival to return to Tenerife empty-handed.

May the 27th, the day we had decided to move on to Graciosa, broke with torrents of rain; throughout the night a violent storm had been raging, and a tearing wind caused us the greatest difficulty in striking camp. The heavy luggage had to be sent on camels via Orsola, while we rode through Haria, past the western slopes of Monte Corona (1940 feet), through thick mist to the summit of "El Risco," where we descended by a precipitous path 1500 feet to the sea-shore. Here we lit a bonfire on the beach to attract the attention of the fishermen on Graciosa, which ancient signal, employed by Mr. Meade-Waldo twenty-seven years previously, is still the only means of communication between the inhabitants of the two islands.

While waiting for the steamer on my return journey to Gran Canaria at Arrecife I made the acquaintance of a local ornithologist, who kindly invited me to view his private collection. The birds were for the most part exceedingly well mounted and included a number of interesting forms. As the entire collection had been formed in Lanzarote by the owner himself, it was of considerable interest.

Besides containing examples of all the commoner species the following were identified without any doubt. It will be seen that several rare stragglers to the Canary Islands are included in the appended list.

List of rare or otherwise interesting species recognised in private collection at Arrecife. All the specimens were said to have been shot in Lanzarote.

Sturnus v. vulgaris (Starling).

Lanius s. senator (Woodchat).

Turdus m. musicus (Continental Song-Thrush).

Cyanosylvia svecica cyanecula (White-spotted Blue-throat).

Jynx t. torquilla (Wryneck).

Cuculus c. canorus (Cuckoo).

Clamator glandarius (Great Spotted Cuckoo).

Asio accipitrinus (Short-eared Owl).

Tyto flammea gracilirostris (Slender-billed Barn Owl).

Falco peregrinus peregrinoides (Barbary Falcon).

Falco eleonoræ (Eleonore Falcon).

- Platalea l. leucorodia* (Spoonbill).
Ardea g. garzetta (Little Egret).
Ardetta minuta (Little Bittern).
Querquedula c. crecca (Teal).
Mareca penelope (Wigeon).
Dafila acuta (Pintail).
Phalacrocorax c. carbo (Cormorant).
Glaucola p. pratincola (Black-winged Pratincole).
Squatarola squatarola (Grey Plover).
Vanellus vanellus (Lapwing).
Machetes pugnax (Ruff).
Calidris arenaria (Sanderling).
Totanus totanus (Redshank).
Himantopus himantopus (Black-winged Stilt).
Recurvirostra avosetta (Avocet).
Limosa l. lapponica (Bar-tailed Godwit).
Limosa limosa (Black-tailed Godwit).
Gallinago g. gallinago (Snipe).
Sterna s. sandvicensis (Sandwich Tern).
Sterna hirundo (Common Tern).
Larus ridibundus (Black-headed Gull) in breeding-plumage.
Rissa t. tridactyla (Kittiwake Gull).
Fratercula a. arctica (Puffin).
Crex crex (Land-Rail).
Porzana parva (Little Crane).
Porzana porzana (Spotted Crane).
Gallinula c. chloropus (Moor-Hen).
Fulica a. atra (Coot).

GRACIOSA.

I had contemplated staying in this island six days, but owing to the exceptionally heavy seas which were running, we were forced to remain here for double that period: an unfortunate state of affairs which ultimately prevented my visiting Allegranza in person through lack of time.

Graciosa is by far the largest of the five small islands which lie to the north of Lanzarote.

It is $5\frac{1}{2}$ miles in length and $2\frac{1}{2}$ in breadth, having an area of $9\frac{1}{2}$ square miles. For the most part it is flat with four extinct volcanoes upon it, the highest point being 873 feet (by aneroid). The soil is very sandy and in parts the surface is thickly strewn with empty snail-shells. In the south the

ground is covered with hummocks which are capped with closely growing plants, such as *Zygophyllum fontanesii* Welb., *Salicornia fruticosa* Linn., *Suæda fruticosa* Forsk., *Atriplex halimus* Linn., and two species of *Traganum*, while a wide belt of sand dunes fringes the shore. Stony plains, stretching to the north and west, surround the large central crater (Montaña de las Agujas), which appears as a mountainous mass rising abruptly from the plain in the middle of the island. The coast-line for the most part is very rocky, particularly on the entire western strand, where the enormous boulders contrast strongly with the flat reefs found on the south and east coasts. The whole shore-line constitutes an ideal haven for Waders of all kinds. A small fishing village has been built on the nearest point to Lanzarote, and from the fishermen who live there we received the greatest kindness. Fine examples—every one of them—of the best type of Spaniard, as yet utterly unspoilt by civilization, which is more than can be said of many of their brothers on the main islands.

I made my camp on the extreme south-east point, and from here thoroughly explored the entire island, ascending all four volcanoes. Living as we did in the midst of many hundreds of Petrels from May the 27th till June the 7th, we were able to see for ourselves the great numbers which come here. I was disappointed that the only Petrel breeding on Graciosa during my visit was *Puffinus kuhli flavirostris*. But these large birds swarm to such an extent that I doubt whether any other species could discover a single nook or cranny in which to deposit their eggs! The fishermen informed me that *Puffinus assimilis baroli* nested in one part of the island earlier in the year, arriving in March and leaving in May. All had disappeared at the time of my arrival, although the remains of their nesting-places could be seen in holes far too small for the Yellow-billed Shearwater to have entered.

The following short list comprises the sum total of the Birds observed in Graciosa during my stay between the

27th of May and the 7th of June; included are one or two species noted by other observers, but which we did not ourselves meet with:—

1. *Acanthis cannabina harterti*.—A single Linnet was seen flying overhead.

2. *Anthus b. bertheloti*.—Resident and breeding. We found them fairly plentiful in certain parts of the island, but not nearly so common as they are in the main islands.

3. *Erythrospiza githaginea amantum*.—Only two small flocks were seen, flying over the camp. We did not come across any on the plains.

4. *Lanius excubitor kœnigi*.—About four pairs were seen. They are evidently resident here, and seem to prefer the sand-dunes between Mt. Amarilla and the camp. One pair was always noticed on a thick patch of Euphorbia scrub near the large central crater. All these birds appeared to be in moult.

5. *Sylvia conspicillata bella*.—Met with in small parties flying about the plains, frequenting chiefly the hummocky ground. There are always four or five together. They are very restless and move about a great deal.

6. *Upupa e. epops*.—Only one example of this bird was seen. It was very wild and had obviously just flown over from Lanzarote.

7. *Tinnunculus tinnunculus dacotiæ*.—About six birds were noticed on the island, all immature. They were remarkably shy and difficult of approach. As we were leaving Graciosa on June the 7th we met several girls carrying baby Kestrels in down, which they had taken from a nest on the western side of the island.

8. *Buteo buteo insularum*.—Meade-Waldo shot a Buzzard here in 1890, which he found living in the walls of one of the craters. I did not observe any myself and did not see any signs of an old nest. They have probably deserted the island.

9. *Pandion h. haliaëtus*.—Often seen round the coasts; there is no suitable nesting-place on this island, but they breed on Montaña Clara, a very short distance away, and almost certainly on El Risco (Lanzarote).

10. *Neophron percnopterus*.—Not resident but often seen. They come over from Lanzarote, where they nest on El Risco.

11. *Puffinus assimilis baroli*.—The Little Dusky Shearwater had already bred and departed, according to the fishermen in Graciosa. They told me that the "Tahoce" came in March and had left Graciosa by the end of May, but that I should still find some remaining on the neighbouring island of Montaña Clara. If *P. a. baroli* does actually breed on Graciosa, I am at a loss to account for the discrepancies between the breeding-season in the two islands. When I arrived in Montaña Clara I found *P. a. baroli* with young in down, of which an account is given in my description of that island (see p. 79).

12. *Puffinus kuhli flavirostris*.—The Yellow-billed Shearwater swarms over the entire island. Three perfectly distinct nesting-sites were chosen, which I shall attempt to describe. When Mr. Meade-Waldo visited the island he explained how "the Petrels burrowed at the foot of the 'Salada Mora' bushes, their roots preventing the sand from filling in." At the present day conditions have changed, and on Graciosa, at any rate, burrows are not often used.

A little to the east of Mt. Amarilla, just above high water-mark, lies a mass of huge boulders piled up one upon another, over the top of which loose sand has drifted, the whole being closely overgrown with a scrubby plant. Small gaps are left between the boulders, and through one of these we managed to squeeze; once inside, our electric torches revealed low caves, into which we had to crawl on hands and knees, and from which a network of subterranean passages led in all directions. In these dark recesses, abounding in nooks and crannies, the large Shearwaters were sitting. The glare of the torches dazzled their eyes as they shuffled into

crevices and behind loose rocks in their vain endeavour to escape from the brilliant light. No nest of any description was attempted by the birds in these caves.

The islanders catch hundreds of these Shearwaters with the greatest ease, employing a thin almond rod about four feet in length with a small hook at the end. This they thrust into the holes and crevices, dexterously transfixing the occupant through the pinions of the wing and drawing the unwilling victim to the surface. Nesting-places similar to the one just described are found in many parts of the island. On the north coast very rugged cliffs of black jagged lava are to be found, in the numerous crevices of which these Shearwaters were nesting in large numbers.

Another colony had chosen a very different situation on the plain east of Mt. Amarilla, about a quarter of a mile from the sea. Here the birds were nesting in burrows in the earth, which was so hard that it absolutely resisted our attempts to dig out the occupants with a sharp-pointed spade. I imagine the Shearwaters had excavated these burrows themselves, as there are no rabbits on Graciosa whose holes they could make use of. I only found one other small colony on Graciosa, where the birds nested in burrows which likewise were too difficult to excavate.

Not content with nesting round the coasts, these birds had resorted in numbers to two of the volcanoes. A few nests were found amongst the lumps of loose lava on the summit of *Montaña Bermeja* (550 ft), but a considerably larger colony was discovered on the eastern slopes of the big central volcano (*Montaña de las Agujas*). Here, at an altitude of 300 to 600 ft., the face of the crater was honey-combed with caves, in almost all of which birds were nesting. As this was the most interesting of all the various sites chosen, I will give a short description of my visit on June the 1st. Two fisher-lads acted as guides, and after a weary climb up 600 feet of loose crumbling lava, we gained the entrance to the largest cave, which measured 6×3 ft. At one end of this outer cave a narrow tunnel ran into the heart of the mountain, through which, by lying full length,

it was just possible to squeeze; after being pulled in front and pushed behind for some fifteen yards, I at last found myself in another small cave; with yet another tunnel leading out of it at right angles to the last. This second tunnel was a little wider, but twisted and turned in the most bewildering manner, gradually opening out into a good-sized cavern which must have been quite twenty yards from the entrance. All the large holes and crevices in the walls of this cave had been utilised by the Shearwaters. A very large number must resort to this particular spot. At this distance from the fresh air an indescribable smell of Petrel greeted our nostrils. The floors of both caves and passages, which were composed of crushed lava, were thickly strewn with the feathers of the birds, and I was unlucky in finding all the occupants out at sea. They had not yet commenced to lay, at any rate in this cave, but we had obtained a fair number of eggs from other parts of the island. The fishermen said that the birds had now come "to clean their nests." The entrance to this lower cave must be three-quarters of a mile from the sea; and although, in the daytime, the birds were often seen flying up and down the strait which separates Graciosa from Lanzarote, yet they never by any chance came to their nesting-holes before darkness had fallen. I took considerable pains to discover what rule governed the comings and goings of these Shearwaters between the sea and their nesting-sites. Living, as I did, on Graciosa and Montaña Clara in their very midst, I hoped to be able to arrive at some definite conclusion on this somewhat little known subject; with this object in view, I made many journeys to different nesting-places after dark. Before laying had become general (*i. e.* during my stay on Graciosa), the majority of the birds would leave their nests before it became light, spending the entire day at sea. They must be excellent time-keepers, for in many cases no inkling of daylight could possibly reach them to warn them that the dawn was breaking. Unless, therefore, they leave their holes before daybreak, while it is still dark, I do not believe that they leave them until dusk, and possibly not until the following

morning. If, however, they have been out to sea throughout the day, they return to land about an hour after darkness has fallen (*i. e.* about 8 P.M.). As soon as they begin to come in they commence calling—a long drawn-out wailing note repeated several times, and often answered from within the ground by a peculiar purring sound, which I imagine is made by their mate. The birds would fly round several times in lessening circles close above the rocks, eventually settling at the entrance to their particular hole. It is then possible, by noiselessly creeping over the rocks and suddenly switching a light into their eyes, to approach within striking distance of the birds. Occasionally, while sitting amongst the rocks with lights extinguished, it is possible to “hook” a bird as it glides close overhead. The fishermen are remarkably adept at catching them in this way, although I should imagine that the method is seldom employed.

By June the 7th, the day on which we left Graciosa, nesting had become general, and all the birds had eggs. On Montaña Clara even better opportunities for studying the habits of these Shearwaters were afforded me, but for the nesting-sites chosen by the birds on this island, I must refer the reader to page 80. Although over a hundred birds were caught (the majority being again liberated), I never once found more than one bird in the hole at a time. Both males and females were taken on the eggs, in about equal numbers; the sex of the sitting bird is easily distinguishable, as the male has a much more formidable bill than the female. Only one egg, of course, is laid, and all varied tremendously in shape and size. The measurements will be found under this species in the annotated list (see Part II.). In many cases a perfectly formed egg, completely shelled, was taken from the oviduct of a dead bird.

The Shearwaters called during all hours of the night, but seemed particularly noisy at about 3 A.M., at which time I believe many went out to sea. I think there is no doubt that they take it in turns to sit on the egg, the male feeding while the hen is sitting and *vice versa*. If pulled out of their holes in the daytime they seemed completely

dazed, and as often as not made no attempt to escape; others would waddle in the direction of the sea, continually catching their wings in bushes and stones and tumbling about in the most grotesque manner. When thrown up into the air some would immediately fly out to sea, while others seemed to lose their power of flight and would come down "plump" on to the rocks, and quickly waddle away until they could gain a ledge from which to "push off."

The sand in which the Shearwaters had burrowed on Montaña Clara was much softer than that of Graciosa, and I was thus able to excavate there with comparative ease. I found the burrows very similar to rabbit-holes but a little larger; the entrances of several measured 6×11 inches and often led 7 feet into the ground. The egg was usually deposited a foot from the further end of the burrow. The passage was generally winding and at times turned completely at right angles. A few feathers and scraps of seaweed were sometimes found doing duty for a nest.

In contrast to these long burrows I was often surprised to find a bird sitting "in broad daylight," having laid its egg in an exposed crevice on the cliffside, not 12 inches from the entrance, where, in the daytime, the rays of the sun shone full upon it. If molested, the Shearwaters bit and scratched with remarkable ferocity, inflicting severe wounds with their formidable bills. As I finally left the breeding-haunts of these Shearwaters on June the 14th, I did not find a single nestling. Several fishermen, who knew their habits remarkably well, told me that the "Pardelas," as they call them, arrived early in April "to clean their nests." As I proved for myself, nesting had become general on June the 1st and all the birds seemed to have laid. The young are hatched early in July, and the fishermen start taking them on August the 5th *for eating purposes*. Many hundreds are taken again in September when the young are exceedingly fat, but they are then boiled down for oil. The men assured me that all the birds leave the island in November, young and old together. In the island of Allegranza hundreds are slaughtered for the sake of their feathers, which fetch quite a good price in Las Palmas.



HÆMATOPUS NIGER MEAD EWALDOI

13. *Columba livia*.—Several pairs were seen on the north coast particularly amongst the sand-dunes.

14. *Hematopus niger meadewaldoi* (Plate VI.).—Two specimens of Meade-Waldo's Black Oystercatcher were procured in this island over twenty years ago. Several collectors who in recent years have devoted their energies to procuring examples of this bird, have been forced to return empty-handed. I have separated this subspecies from *Hematopus n. niger*, with which it had previously been identified (*vide* Bannerman, Bull. B. O. C. xxxi. 1913, p. 33).

15. *Edicnemus edicnemus insularum*.—A pair of Thick-knees was found breeding close to the camp. Only one egg had been laid; the second, which was very beautifully marked, was taken from the oviduct of a female, shot on the 3rd of June. This pair was flushed the first day we arrived in the island, and after circling round once or twice, flew over the strait dividing Graciosa from Lanzarote.

16. *Ægialites a. alexandrina*.—The Kentish Plover was by far the commonest Wader met with. On Graciosa a young bird was obtained just able to fly, and on the 5th of June we found a nest close to that of a Thick-knee, both within 50 yards of our camp. Although we had suspected both birds of having eggs, we did not discover the nests until we had been in this camp for over a week. The two eggs of the Kentish Plover were laid in a depression of the bare ground between the points of two half-buried stones. The eggs were quite freshly laid. I know of no nest so difficult to discover.

17. *Squatarola squatarola*.—A single flock of Grey Plovers was seen on the reef on the south coast.

18. *Arenaria i. interpres*.—Turnstones were very numerous, the rocky coasts being just suited to them. A few were in full breeding-plumage.

19. *Tringa a. alpina*.—A very few Dunlin were seen.

20. *Totanus nebularius*.—Only one Greenshank was seen.

21. *Numenius a. arquatus*.—Four Curlews were flushed on the hummocky plain at the foot of the Montaña de las Agujas. It would not have been surprising had we discovered them breeding here, as Herr von Thanner recorded the nesting of this species in the south of Fuerteventura (Orn. Jahrb. 1908, p. 213).

22. *Numenius p. phaeopus*.—The Whimbrel was met with on all parts of the coast, the rocky pools and exposed reefs being exactly suited to their habits.

23. *Sterna s. sandwicensis*.—According to the fishermen, Terns, or “Garajáos” as the islanders call them, visit Graciosa whenever “Sardinas” are particularly numerous. I did not meet with either the Common or Sandwich Tern anywhere in the islands.

24. *Larus cachinnans*.—The Yellow-legged Herring Gulls are very plentiful in Graciosa, although they do not actually breed there. They were very tame indeed, and frequented the small fishing village in numbers. The chief breeding-station of this species in the eastern islands is the Roque del Este, while others probably nest on the high cliffs in Lanzarote, known as El Risco.

NOTE.—It is worthy of special notice that no Lesser Black-backed Gulls (*Larus fuscus affinis*) were seen at all during the expedition. This proves more or less conclusively that the species does not breed in the eastern Canary Islands, as I had half expected to find. If any of these Gulls had been breeding on the outer islets the fact could hardly have escaped our notice, as they would undoubtedly have visited the Graciosa fish-curing depot, where we were constantly on the look-out for them. All the smaller islands and rocks, with the single exception of the Roque del Este, were visited by the expedition.

It can therefore be inferred that the western *light*-backed race (*Larus fuscus affinis* Reinhardt) is a regular winter

migrant to the Canary group [see my remarks 'Ibis,' 1912, p. 575, and Bull. B. O. C. xxix. 1912, p. 121]; while the eastern dark-backed race (*Larus fuscus fuscus*) is a very rare straggler to the islands [see remarks by Mr. Meade-Waldo and myself, Bull. B. O. C. xxxi. 1913, p. 69].

During the greater part of our stay in Graciosa we were subjected to a good deal of inconvenience by the severe wind, which blew almost continuously for a week, and increased to a regular hurricane on the night of June the 3rd. The result was that a very high sea prevented the landing of our baggage on the neighbouring island of Montaña Clara. At length, on the 7th of June, the sea had dropped sufficiently to allow of our making the attempt, and with six sturdy boatmen, all members of one family, we set sail on the never-to-be-forgotten voyage to Montaña Clara! There is only one landing-place, on the south-eastern shore, and this we eventually reached, very wet and miserable. We were all heartily glad to set foot at last on the island, which I hoped to find the most interesting and productive of all the Petrel haunts to be visited. My hopes were fully realized.

MONTAÑA CLARA.

The little island of Montaña Clara lies north-west of Graciosa, from which it is separated by a channel of very turbulent water. Of undoubted volcanic origin, the island is situated approximately 98 statute miles from the nearest African coast (Cape Juby).

Eight days were spent here, from June the 7th to June the 14th, during which time a thorough survey in every direction was made. Montaña Clara is a heart-shaped island, a mile and a quarter in length and three-quarters of a mile wide, and embracing an area of half a square mile. It consists of a single large, but imperfect crater, which occupies the entire northern portion of the island, the walls falling precipitously to the sea, and the highest point rising to 700 feet. The south of the island is occupied by a steep ridge (sloping to the south-east) of lava, scoria, and sandhills, intersected

here and there by small barrancos. On this low ground several desert plants flourish, *Launæa spinosa*, *Suaeda fruticosa*, *Mesembryanthemum nodiflorum*, etc.; but for the most part the whole island is very barren. A single water-hole, entirely dependent on the rainfall for its supply, constitutes the only drinking-water to be found. Apart from two rude stone huts built as rest-houses by the fishermen who occasionally land here, the island is without habitation.

The coast-line is composed of precipitous cliffs, with the exception of the basin on the extreme north, and the ridges on the south-east and south-west. The latter exhibit traces of a recent land-slide, and there is evidence that another heavy fall will take place on the highest part of the ridge in the near future. The result of these land-falls is that the shore-line is strewn with immense boulders, under which *Bulweria bulweri* was found breeding. To my mind the peculiar physical characters of Montaña Clara are solely responsible for the fact that this island (though considerably smaller than Graciosa or Allegranza) is the breeding-place of three, if not four, species of Petrels.

Two events of considerable interest took place during my stay on Montaña Clara. The first was the discovery of a new Chat (*Saxicola* * *dacotiæ murielæ*) which we at first took to be typical *Saxicola d. dacotiæ* in full autumn-plumage. On our return to England, however, further examination proved this to be a new subspecies, which I have described shortly in the Bulletin of the British Ornithologists' Club, vol. xxxiii. 1913, p. 37. I have thought it advisable to include in this paper a more minute description of the bird in question, together with an excellently coloured drawing by Mr. Grönvold (Pl. V.) depicting the adult male in full autumn-plumage and an immature bird of the year. Future workers should therefore have no difficulty in distinguishing between the two geographical races of this *Saxicola*. It must here be noted that this new Chat again turned up in considerable numbers in the island of Allegranza, and altogether a complete series was obtained.

* *Pratincola* auct.



SAXICOLA DACOTIÆ MURIELÆ

The following is a List of the Birds seen on Montaña Clara :—

1. *Corvus corax tingitanus*.—A pair of Ravens lived in the high cliffs shown in the photograph (Pl. III. fig. 2) ; they doubtless breed there every year.

2. *Anthus b. bertheloti*.—Not at all uncommon ; all the specimens procured were in full moult. This Pipit probably breeds in the island.

3. *Saxicola dacotiae murielæ*. (Pl. V.).—The discovery of this Chat, which I met with for the first time in this island and subsequently in Allegranza, proved to be the most notable event of the expedition. Hitherto no ornithologist, least of all myself, had dreamt of finding a *Saxicola* on these small desert islands. It was therefore with no little pleasure that I examined the first two examples which had been shot by Bishop, my taxidermist, two days after our arrival in Montaña Clara. Four or five birds were seen together on the low ridge behind the camp ; this was the only occasion upon which they were met with in this island, the party consisting of both adult and immature birds. They perched on the low plants that were growing amongst the lava and sandhills, conspicuous amongst which was *Suaeda fruticosa* Forsk., with a pretty purple bloom.

As already mentioned, I published a short description of this subspecies in the October number of the 'Bulletin.' The following is a minute description of the adult male, female, and young bird of the year. A comparison is given between *S. d. murielæ* and *S. d. dacotiae* in certain plumages :—

Adult male (full autumn-plumage, from a specimen shot on June the 12th).

General colour of the upperparts brownish, each feather with clearly defined wide dark brown shaft-streaks ; crown of the head and nape of a darker shade than the back, with small dark brown bases to the feathers ; rump and upper tail-coverts light cinnamon-brown with the shaft-streaks very faint ; wings dark brown, the primaries edged with

dirty white on the inner web and buff on the outer web ; secondaries widely margined with buff, as also the primary, median, and lesser wing-coverts ; under wing-coverts and axillaries white ; scapulars white ; rectrices dark brown margined on the outer web with buff ; cheeks, lores, and ear-coverts blackish. A conspicuous white stripe extending from the bill over and beyond the eye ; eyelids white ; chin pure white—the white extending beneath the cheeks and forming a half-collar ; chest, breast, belly, and flanks nearly uniform vinaceous buff, rather darker on the chest ; under tail-coverts whitish.

Iris dark brown ; bill and feet black.

Culmen (exposed) 11 mm. ; wing 65 ; tail 47 ; tarsus 23.

Adult female. Differs from the male in wanting the black cheeks, lores, and ear-coverts, which are light brown, and in having the entire underparts much paler vinaceous buff.

Culmen (exposed) 11 mm. ; wing 60 ; tail 48 ; tarsus 23.

Immature birds are, if anything, darker on the upperparts than the adults and can be distinguished at once by the white tips to the feathers of the crown, nape, and hind neck, which give to the bird a speckled appearance. The white half-collar and scapulars are quite distinguishable in the young bird. The chin and throat are less pure white, and the breast is pale buff with minute brown tips to each feather. The flanks are very pale buff, almost white.

Comparison with *Saxicola d. dacotiæ*.—In the worn plumage at the commencement of the autumn moult an adult male, killed on the 12th of June in Allegranza, differs from an adult male of *S. d. dacotiæ*, killed on the 17th of June in Fuerteventura, in having the crown of a lighter and more reddish brown, not showing the marked contrast with the rest of the upperparts. The underparts from the chest downwards are nearly uniform vinaceous-buff, rather more deeply coloured on the upper part of the chest, while in *S. d. dacotiæ* the chest patch is of a rather more rusty tint and the belly and flanks are usually much paler and inclined to whitish.

In full autumn-plumage (see Pl. V. fig. 1) the new sub-

species nearly resembles the Fuerteventuran bird, but may be distinguished by having the dark bases of the feathers of the crown smaller and much less pronounced, and, as already mentioned, the breast and belly are isabelline instead of whitish.

Habitat. The Islands of Montaña Clara and Allegranza.

[NOTE.—It will be recollected that up till this time no Chat of any description had ever been found in the Canary Islands, with the important exception of *Saxicola dacotiae dacotiae* Meade-Waldo, which is confined to the island of Fuerteventura. By glancing at the map (Pl. II.) it will be seen that the large island of Lanzarote and the much smaller island of Graciosa both lie between Fuerteventura and the two outlying islets of Montaña Clara and Allegranza, upon which the new subspecies was discovered.]

12 examples were obtained.

The types are in the British Museum: ♂. Allegranza, 12. vi. 12; ♀. Allegranza, 10. vi. 13.

I have named this new Chat after my wife, who accompanied me during the first part of the expedition.

I am indebted to the authorities of the Tring Museum for placing their large series of *S. d. dacotiae* at my disposal, and to Mr. Ogilvie-Grant for examining with me the material in the British Museum.

4. *Delichon u. urbica*.—A single House-Martin was seen on June the 9th. The bird was being pursued by a Falcon, which vainly struck at it several times.

5. *Micropus murinus brehmorum*.—These Swifts were not by any means common. A few were noted on the hottest days. A pair was, I believe, nesting in a hole of the cliff (see foreground of photo, Pl. III. fig. 2). They kept on flying in and out of a hole, and the male bird, which I eventually shot, had the testes very large.

6. *Falco peregrinus pelegrinoides*.—The Barbary Falcon was known by Herr Polatzek to nest on Montaña Clara. On several occasions I saw a Falcon soaring above the high

cliffs on the north-west, and on my last day in the island I obtained a splendid view of the bird at close quarters. I had been sitting waiting for Swifts in the rocky cove seen in the foreground of the accompanying photo (Pl. III. fig. 2), when two Rock Pigeons darted out from a crevice overhead and flew out to sea; hardly had they left the shelter of the overhanging cliff when a Falcon dashed down upon them from above; the Pigeons, flying at a great speed, described a semicircle over the sea, and being soon caught up by their speedy foe, headed again for the cliffs. All three eventually passed over me within five yards of my head. There is little doubt that the bird was a fine example of *Falco peregrinus pelegrinoides*.

7. *Tinnunculus tinnunculus dacotiae*.—Kestrels were seen on several occasions but were not plentiful. They probably breed on the island.

8. *Pandion h. haliaëtus*.—A pair of Ospreys is resident on the island, and could be seen every day soaring high over the sea.

9. *Neophron percnopterus*.—Two or three Egyptian Vultures were seen on different occasions. They may possibly nest on the high cliffs on the north-west of the island (Pl. III. fig. 2).

10. *Thalassidroma pelagica*.—There is no record of a Storm-Petrel having been taken on land in any of the Canary Islands to my knowledge. I therefore experienced no little surprise when a male specimen was caught and brought to me by the fisherman who had remained with me on Montaña Clara. This man graphically described to me how, having entered a large cave, he had pushed his almond rod into a hole, when out flew the "Alma Mestre" into his face; he had knocked the bird down and brought it to me in triumph. An examination of this specimen showed the testes to be enormously developed, with every indication that the bird was breeding. Unfortunately the cave could only be visited once again before my final departure from the island, and I

was therefore unable to verify my supposition that the bird was nesting there. There seems to be no reason why isolated pairs of *T. pelagica* should not breed on such deserted islets.

11. *Puffinus assimilis baroli*.—The Little Dusky Shearwater, concerning which so much discussion has recently taken place, was found breeding on Montaña Clara. I had certainly not expected to meet with this usually very early breeder in any of the islands so late as June the 7th. The fact that we actually took eggs as well as the young in all stages, shows that there is great variation in the time of breeding of this species in the different islands of the group. It will be recollected that if the fishermen are to be believed, and I have often proved their statements to be correct, *P. a. baroli* had already bred and left the island of Graciosa by the 27th of May. Mr. Meade-Waldo took the young of this species in Tenerife on April the 26th, and an adult on March the 16th with the bare hatching spot on its breast.

Shortly before our arrival a party from Haria had specially made the journey to Montaña Clara to collect "Tahoces," as *P. a. baroli* are locally called. Whether these individuals had succeeded in making a good haul I did not learn, but the only breeding-station which existed contained a very small number of birds. To reach this colony it was necessary first to ascend the mountain and having crossed the plateau, which lies at the summit, to descend the almost perpendicular inner wall of the crater to the floor beneath. In this basin, one side of which lies open to the sea, the Little Dusky Shearwaters were breeding under the huge rocks which had fallen from above. It being impossible to reach this spot after dark, I was unable to obtain, as I had hoped, a series of adult birds, although several had practically attained mature plumage and could only be distinguished by one or two downy filaments still adhering to the feathers on the flanks. Only two eggs were obtained and a few nestlings in down.

12. *Puffinus kuhli flavirostris*.—These Shearwaters were as numerous in this island as in Graciosa. They were nesting under the shelving strata just above sea-level, in burrows amongst the sandhills, under the loose lava lumps on the mountain side at 600 ft., and again in burrows on a plateau at the summit of the volcano. Our camp, situated on the lowest ridge, was surrounded on all sides by their nesting-holes, and as a result sleep for the first two nights was almost impossible.

As I have given a long description of the habits of this Shearwater in my account of the Birds of Graciosa (pp. 66-70), it is unnecessary to add more, but it may be noted that, on my arrival in this island on June the 7th, every bird had commenced to sit.

13. *Bulweria bulweri*.—This was the only small island on which we found Bulwer's Petrel breeding. Here, however, they were quite common, although their numbers seemed but scant in comparison with those of the large Shearwaters! By far the most attractive in appearance of all the Petrels, these sombre-coloured little birds were breeding all round the island under the large boulders which had fallen from the cliffs. They were most common in the actual neighbourhood of my camp, where many of their nesting-sites were under rocks only just beyond the reach of the waves. Holes were sometimes utilised, and we found two close together about 40 ft. up the side of the cliff, each containing a bird. We dug these holes out and found the birds sitting about 2 ft. from the entrance. In no case was there any attempt at a nest, the single egg being deposited on the bare stone. At the time of my visit all the birds had laid. In one case a fisherman brought in two eggs, which he assured me he had found in the same "nest" lying side by side, doubtless the product of two females. All the eggs were freshly laid, and I gathered from the fishermen that the birds had not long come to land.

Bulwer's Petrel is almost entirely nocturnal in its habits,

and we never saw any flying in the neighbourhood of the island during the day. If pulled out of their holes these birds seemed very dazed, but invariably attempted to escape by crawling under stones. In one case, however, a bird which we had placed on a rock in the brilliant sunlight waddled to the edge and immediately flew out to sea.

The local name for this Petrel is "Perrito." I never heard it called "Tahoce negro," as recorded by Mr. Meade-Waldo; very probably the latter is the name used for the bird in Tenerife, for a considerable difference exists in the local nomenclature of individual species in the various islands. A large series of these little Petrels was obtained together with their eggs, but all were adult birds, the young having not yet hatched. Montaña Clara is the only island on which *Bulweria bulweri* was met with.

14. *Columba livia*.—Not very plentiful but several pairs are resident in the lava cliffs on the north-west coast. I should think that they have difficulty in finding sufficient food.

15. *Larus cachinnans*.—So far as I can tell, the Yellow-legged Herring-Gull does not breed on Montaña Clara. It is, however, very plentiful round the coast, and many birds roosted at night-time on the north-eastern cliffs. Occasionally the fishing-boats put in here to pass the night, and at such times the Gulls simply swarmed, fighting and screaming for the remains of the fish cleaned by the men.

L. cachinnans was the only species of Gull met with.

ROQUE INFIERNO, OR THE WEST ROCK.

While staying on Montaña Clara I arranged to visit on the first possible occasion, the Roque del Oeste, an isolated mass of lava lying almost due north of Montaña Clara. Accordingly on June the 11th my boatmen arrived from Graciosa and we set out for the rock. The sail was not the most enjoyable I have had! We were all soaked to the skin long before we drew near to the Roque Inferno, which has been rightly named indeed! Over half an hour was spent

in attempting to bring the boat alongside, and when at last we were able to jump ashore we were almost up to our waists in water. This is the smallest of all the islets and covers an area of some 40,000 square yards. Composed entirely of jagged lumps of black lava heaped one upon the other, the highest point is only 30 feet above sea-level. I climbed all round the rock, and although I had been informed that there were no birds on it, I found numbers of large Shearwaters (*P. k. flavirostris*) nesting in the holes and crevices.

This was the only member of the Petrel family encountered, but several other birds were seen; most interesting of these was a Falcon which appeared to be very blue in colour. It was very probably the same bird that I had seen in Montaña Clara, but the sun being directly behind the bird I did not get a clear view of it. A pair of Ospreys was sitting on the rock as we approached, and a Kestrel hung poised in the air above a small gathering of Yellow-legged Herring-Gulls. Four species of plants were found growing amongst lava blocks, but unfortunately all my samples were destroyed before they could be identified. An ice-plant (*Mesembryanthemum nodiflorum*), which grew in patches, appeared to be fairly common. Specimens of *P. k. flavirostris* and their eggs were collected here. I had hoped to find *Bulweria bulweri* breeding, but in this I was disappointed.

THE EAST ROCK.

After visiting the West Rock I was forced to abandon all idea of landing on the East Rock, which lies in a much more exposed position than even the first named. Situated $7\frac{1}{4}$ miles from Lanzarote, "El Roque," as the fishermen call it, has an area of roughly 125,000 square yards. The following is a short description of the island by Dr. Karl Sapper (*vide* Petermann's *Mitteilungen*, vol. 52, 1906, pp. 173-184):—

"The Roque del Este shows two summits, one in the S.W. of 65 m. and a second in the N.E. of 81 m. South-east of the latter an eruptive mass starts out of the sea

like a watch-tower, the Campanario del Roque del Este. Both peaks belong to the south-west wall of a great crater the bottom of which is covered by the sea."

"El Roque" is plainly seen from Lanzarote, and its precipitous cliffs look highly formidable from this distance. It is noteworthy chiefly on account of the Gulls, *Larus cachinnans*, which breed there in April. I enquired of the fishermen whether they had ever seen a large Black-backed Gull amongst the others; they did not, however, appear to know the bird, although *Larus marinus* is said to breed on one of the deserted islets. A number of eggs of the former species, which had been taken earlier in the year, were brought to me. The fishermen told me that two Falcons "were eating up all the seafowl on the Rock"! As I could not land there I did not discover what Petrels were breeding, if any. I had hoped to find a breeding-station in the Canary Islands of the pretty little Frigate Petrel (*Pelagodroma marina*). The fishermen, who knew the bird well, informed me that they seldom saw it in the Canary Seas, but said it was to be found in hundreds round the Salvage Islands, which is, of course, true. In the Canary Islands the bird is called "El bailerino"—*i. e.* The Dancer—from its habit of dangling its legs on the waves. It is curious that it does not breed in the Canary Archipelago, as it does so in the Cape Verde and Salvage Islands.

Having spent so much of our precious time imprisoned in Graciosa, owing to the inclement weather, I was forced, as I have already mentioned, to give up any idea of visiting Allegranza in person, and therefore decided to send my taxidermist to that island, while I remained on, and thoroughly explored, Montaña Clara. Two days after our arrival in the latter island I sent Bishop to Allegranza, arranging to meet him in seven days' time at Haria in Lanzarote, from which town we were to begin our journey homewards. The two islands were therefore worked concurrently, and the adoption of this plan was quite justified

by the results. Bishop spent six days (June 19-14) on Allegranza and made a thorough report on the birds found there; he also supplied me with a useful sketch-map of the island and took a number of photographs, from all of which I have drawn up the following account.

ALLEGANZA.

Situated $5\frac{1}{2}$ miles due north of Montaña Clara and 103 miles from the African mainland, Allegranza is the extreme northerly member of the Canary group. Almost round in shape the island is larger than Montaña Clara, being $2\frac{3}{4}$ miles long by $2\frac{1}{4}$ broad, and having an area of $3\frac{3}{4}$ square miles.

At the western end an immense extinct volcano—Montaña de la Caldera—rises to 940 ft., and on the south-east coast two smaller craters rise abruptly from the sea. The rest of the island is for the most part flat and consists of low hills, lava slopes, and stony plains.

The usual vegetation of the eastern islands is met with, including low Euphorbia bushes with enormously thick stems. Here and there patches of wheat have been cultivated on the plains, but for the most part the island is unproductive.

Allegranza possesses a lighthouse built on a low neck of land on the extreme eastern point. Both from the Keeper of this lighthouse and the Majordomo who looks after the island for the owner, my party received the greatest possible kindness.

Ornithologically Allegranza proved highly instructive, for considering the isolated position which it holds, a surprising number of apparently resident species were recorded. The most noteworthy occurrence was, of course, that of the new Chat, but amongst other interesting species may be specially mentioned *Tyto flammea gracilirostris*, *Buteo buteo insularum*, and *Ædicnemus ædicnemus insularum*.

Only one form of Petrel was found here—*Puffinus kuhli flavirostris*; but, as in Graciosa, it seemed to monopolise every hole and cave available.

It has been said that the Manx Shearwater, *Puffinus p. puffinus*, breeds on Allegranza (Webb & Berthelot, Ornithologie Canarienne, 1841, p. 43). It has also been cited by Cabrera y Diaz (Catálogo de las Aves Archipiélago Canario, 1893, p. 65), who remarked that "it is common in the eastern group, where it nests on the deserted rocks."

Mr. Meade-Waldo (Ibis, 1893) stated that the bird did not seem to come to land.

Specimens are rarely captured in the Canary Islands, and I believe that when they are it is invariably in the winter, during which months they are sometimes fairly common. I could not discover any evidence of this bird having bred here in recent years.

Another Petrel which has been reported as nesting on remote rocks of the Canary Islands is *Oceanodroma castro*. This bird has been found breeding on the Azores, Porto Santo, the Desertas (off Madeira), the Salvages, and the Rombos Islands in the Cape Verde group. Up till the present, however, I am not aware that any authentic case has occurred of its breeding in the Canary Archipelago.

Messrs. Webb and Berthelot and Dr. Bolle mention the Great Black-backed Gull (*Larus marinus*) as breeding in the island of Allegranza. I did not meet with the species myself, nor could I gather any information which might lead me to suppose that *L. marinus* nests on the island at the present day.

The following is a list of the birds observed:—

1. *Corvus corax tingitanus*.—Only one seen. Formerly the Raven was said to be plentiful in Allegranza. They have, however, been killed off in late years.

2. *Acanthis cannabina harterti*.—Scarce and very shy.

3. *Anthus b. bertheloti*.—Very plentiful and in full moult.

4. *Erythrospiza githaginea amantum*.—A flock of Trum-peter Bullfinches was seen in one of the craters.

5. *Sylvia conspicillata bella*.—Only one Spectacled Warbler was seen.

6. *Saxicola dacotiae murielæ*.—The Chats were chiefly found in one part of the island, frequenting barren stony country and low hills covered with Euphorbia and other desert vegetation. They were also seen in the small crater on the south-eastern coast; they were usually in parties of three to five, and everywhere decidedly plentiful. Both adults in full autumn plumage, and immature birds were obtained.

The Majordomo, who knew the bird well, asserted that they bred in the island and were resident throughout the year.

7. *Hirundo rustica*.—A single Swallow was seen flying over the island in a north-east direction.

8. *Delichon u. urbica*.—Quite a number of House-Martins were seen. They are said to breed regularly in a cliff on the south coast.

9. *Micropus murinus brehmorum*.—Only three examples of this form were seen.

10. *Upupa e. epops*.—Only one Hoopoe was seen. It was very shy.

11. *Tyto flammea gracilirostris*.—Two Barn Owls were seen. There are said to be two or three pairs here which breed annually on the island. They are very difficult to obtain.

12. *Falco* sp. incog.—A small Grey Hawk was seen on one occasion, but was unfortunately not procured. I cannot conjecture what it could have been. The only small greyish Hawk which has ever been taken in the Canary group appears to be *Falco v. vespertinus*, but one would hardly expect to find this species turning up in the Canary Islands at the time of year we were there.

13. *Tinnunculus tinnunculus dacotiae*.—Kestrels were quite common and are said to be resident here throughout the year.

14. *Buteo buteo insularum*.—Three or four Buzzards were seen together in the crater on the south-east coast.

15. *Pandion h. haliaëtus*.—Fairly plentiful and breeding on the island. There is an eyrie on one of the smaller volcanoes, the side of which falls abruptly to the sea.

16. *Neophron percnopterus*.—A pair was seen, said to be the only one on the island, where they probably breed.

17. *Ardea cinerea*.—Only one example was seen.

18. *Puffinus assimilis baroli*.—This Shearwater does not, so far as we could gather, breed on Allegranza. Individuals are said occasionally to strike the lantern of the lighthouse during the early part of April. None were seen by my party.

19. *Puffinus kuhli flavirostris*.—Very plentiful. Breeds everywhere on the island both inland and round the coast wherever holes are available.

20. *Columba livia*.—Very few Rock-Doves were seen.

21. *Ædicnemus œdicnemus insularum*.—The Thick-knee was found to be fairly plentiful and breeds in the island.

22. *Larus cachinnans*.—Very scarce.

RETURN JOURNEY TO GRAN CANARIA.

On June the 14th I left Montaña Clara and began my return journey to Arrecife. The friendly fishermen arrived very early in the morning, as previously arranged, to take me off, and by 9.30 A.M. the collecting boxes and tents were all safely stowed away in the boat. A considerable delay was occasioned by my two Turtle-Doves, which could not be found. Over half an hour was spent in searching for them, and they were at length discovered enjoying a sunbath in the warm soil; their plumage harmonised so exactly with the colour of the earth that even the sharp eyes of the fishermen could not detect them—an excellent instance of colour protection. Having sailed across the intervening strait, I landed once again on Graciosa and walked across the island to pick up the boat at the fishing village. From this point we sailed to the foot of El Risco, and having said goodbye to the owners of the "San Francisco," began the heavy climb up 1500 ft. to the summit. My baggage I sent round to Orsola on the north coast of Lanzarote, where camels were to meet it and await the other boat from Allegranza.

Birds were scarce, and only Kestrels and Rock-Pigeons were noted on the way up. As usual, a bank of cloud lay like a blanket along the ridge. We found our camel

sheltering in a hollow, its owner wrapped closely in a huge overcoat to protect him from the cold wind. The thermometer which I carried registered 100° in the shade while crossing Graciosa, and the change to driving mists and a cold wind was very unpleasant. As we descended to Haria the mists disappeared, and we obtained a fine view of Monte Corona. It is from this crater that a gigantic lava-flow runs, upon which the Barbary Partridge is said to be found—the only locality frequented by this species in Lanzarote, while Partridges are entirely absent from Fuerteventura.

On the plains surrounding Monte Corona very many Ravens (*Corvus corax tingitanus*) were seen, but they were, as usual, exceedingly wary. “El cuervo sabe mucho” is a local saying with no little truth in it!

As we neared Haria an unusual number of Kestrels, nearly all immature birds, were noticed. Eight or nine were seen together hovering over a small field. Having passed through the town we camped for the night close to the road, and the following day proceeded to Puerto Arrecife, where we spent our last night under canvas preparatory to boarding the steamer the following evening. Arrecife is anything but a pleasant town, and as we arrived on a Sunday our camp was soon surrounded by the entire idle population of the port! Throughout the following day long strings of camels kept passing into the town, all heavily laden with onions, of which a prodigious number must be shipped annually from Lanzarote.

During the evening of June the 16th, we boarded the new interinsular steamer and finally left Arrecife at 2 A.M. *en route* for Puerto Cabras, where we dropped anchor after three and a half hours at sea. As we had arrived here so early in the morning, I determined to go ashore at once and attempt to shoot some more Sand-Grouse, as they came in from the plains. While in this town I was presented with a fine young Bustard which had died in captivity; and after adding to my series of Swifts many which were hawking over the plain, I again boarded the ‘Corréo’ and coasted to Gran Tarajal—an insignificant port, which was reached early in the afternoon.

A heavy surf runs in here, and as no boat could ground with safety on the beach, we were carried ashore on the shoulders of the Spanish lightermen, getting uncomfortably wet during the process!

The Valley of Gran Tarajal, which we set out to explore, is thickly lined with tamarisks, as its name implies. No vegetation was growing on the sides of this barranco, which were rugged and barren, and from the crevices many Rock-Doves dashed out as we passed.

In the tamarisks a number of birds were noted, the most interesting to me being *Sylvia c. bella*; this was only the second time we had met with the Spectacled Warbler in Fuerteventura. Shrikes, Hoopoes, Trumpeter Bullfinches, Pipits, and Chats, were all noticed in turn, the latter being found even on the beach. As we continued up the valley a pair of Egyptian Vultures flew leisurely overhead, keeping as usual well out of gunshot. I was much interested to see a black Falcon flying along the edge of the barranco—the bird passed close to me and struck at some tame Pigeons which were circling round a house. This could only have been *Falco eleonoræ*, its long pointed wings being very conspicuous during flight. As we proceeded the valley opened out—the tamarisk scrub became thinner and the ground was partially under cultivation. Immediately before us a group of low hills, at the foot of which clumps of date-palms were growing, lent an unusually tropical effect to the scene, and beyond this again we caught a glimpse of the great plain stretching to the distant mountain-chain.

The low hills in the foreground obscured the village of Tuineje, which immediate neighbourhood may be considered the true home of *Chlamydotis undulata fuerteventuræ*, *Cursorius g. gallicus*, and *Pterocles arenarius*.

As the sun was rapidly sinking we were forced to leave this fascinating scene and retrace our steps to the shore. Nothing of further interest was noted until we had almost gained the beach, when a pair of Thick-knees was flushed. No Waders of any description were met with on this part of the coast, the Yellow-legged Herring-Gulls holding entire sway.

In the account of this trip I have attempted to give some idea of the physical features amongst which the birds live in these intensely interesting islands. The account would not be complete without a short description of the narrow peninsula forming the southern neck of Fuerteventura. From the deck of our steamer a clear view was obtained, on more than one occasion, of the "Matas Blancas," an eight mile stretch of absolutely bare sand dunes forming an isthmus between the main island and the mountainous mass known as the Orejas de Asno. The highest peaks of these rise to 2770 ft., which is the greatest elevation reached by any mountain in Fuerteventura. Beyond the Asses' Ears is a bare plain which culminates in the rocky headland of Punta Jandia: this is probably the best spot in the entire group for observing the migrations of the Charadriidæ, of which a considerable number of species must touch on this unfrequented part of the coast.

The only sign of habitation is the lonely lighthouse built on the extreme south-westerly point—the last we saw of Fuerteventura as the little steamer passed beyond the shelter of the land on the final stage of our journey to Gran Canaria.

Explanation of the Plates.

PLATE II. Map of the eastern Canary Islands, showing the route followed.

PLATE III. Fig. 1. A typical tamarisk valley in Fuerteventura.

„ Fig. 2. North-west cliffs of Montaña Clara.

PLATE IV. Fig. 1. The home of *Savicola dacotiæ dacotiæ*. A barranco on the west coast of Fuerteventura.

„ Fig. 2. Montaña Clara, Roque del Oeste and Allegranza, showing Graciosa in foreground.

PLATE V. Fig. 1. *Savicola dacotiæ murielæ*, adult male in full autumn plumage.

„ Fig. 2. *Savicola dacotiæ murielæ*, immature bird of the year.

„ VI. *Hæmatopus niger meadewuldoi*.

[To be continued.]