

On the 23rd of May I took a nest of four eggs, slightly incubated, in a bank by the stream Mudawarah, about half a mile above the colony of *C. rudis*. The nest was at the end of a tunnel, not more than 2 feet in, and directly facing the entrance, with a very few straws for lining. The entrance was about six inches above the level of the water, and in a deep, sluggish part of the stream. The eggs were nearly spherical, and considerably larger than those of *C. rudis*. *Contd 280*

VII.—*Notes on the Birds of the Azores.* By FREDERICK DU CANE GODMAN, F.L.S., F.Z.S., &c.

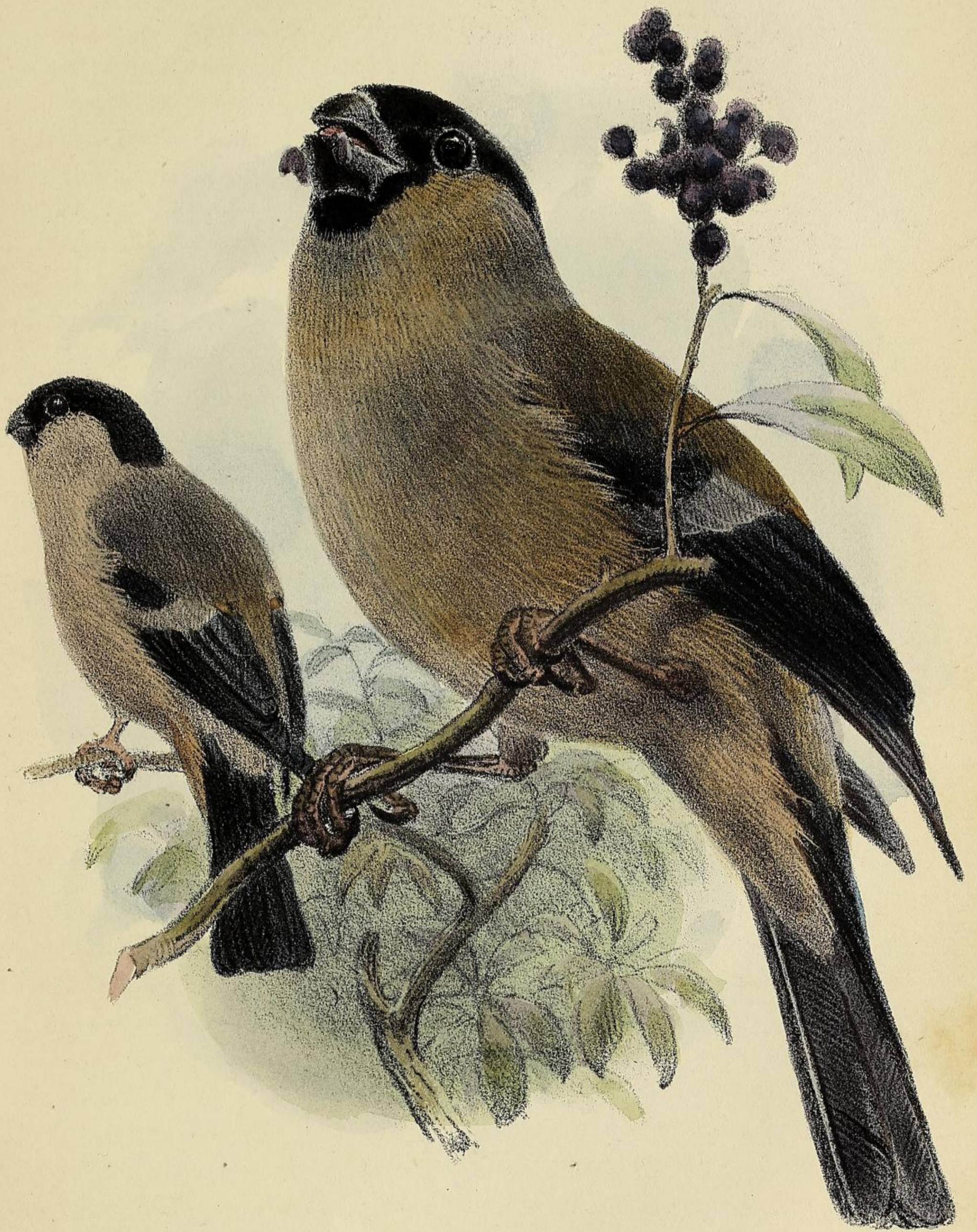
(Plate III.)

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ON the 13th of March, 1865, the Brazilian mail-steamer 'Oneida' landed my brother, Captain Godman, and myself at Lisbon. Here we found the 'Leal,' a small screw-steamer, about to start for the Azores; she runs with more or less regularity once a month, and, calling at five of the principal islands, returns direct to Lisbon. We took our passage in her to St. Michael's, and, after a rough voyage of six days, were glad to find ourselves at daybreak on the 21st at anchor in the roadstead of Ponta Delgada, the capital of that island.

The gales which had followed us on our voyage were now succeeded by a perfect calm, leaving, however, heavy clouds resting on the tops of the higher mountains, which, together with the dark foliage of the orange-trees and native evergreens, gave the island a particularly gloomy appearance.

There were about a dozen English schooners anchored off the town, waiting for cargoes of oranges; and two more at a short distance out at sea were trying to come in, on board one of which was my collector, Mr. Brewer. He also had experienced heavy weather, but on the whole had had a fairly prosperous voyage of a fortnight from London.

The Azores lie between long. 25° and 31° 15' W., and the most eastern islands are 16° west of Lisbon. They are nine in number, and may be divided into three groups,—St. Michael's and St. Mary's forming the eastern; Terceira, Graciosa, St. George's, Pico, and Fayal the central; Flores and Corvo the extreme western. They have an aggregate area of 700 square miles, and



J Wolf. del, et, lith.

M. & N Hanhart. imp.

PYRRHULA MURINA.

are of volcanic origin. St. Michael's, the largest and, from its trade in oranges, to us the best-known, has a population of 80,000 inhabitants. It stretches nearly east and west, being much longer than it is broad. At the eastern end the mountains rise to a height of upwards of 3500 feet, and are chiefly covered with tree-heath (*Erica azorica*), juniper (*Juniperus oxycedrus*), faya (*Myrica faya*), and other evergreen shrubs. The peak of Agua de Poa in the centre reaches a height of 3070 feet; between this and the west end the land is lower, but is still studded with numerous small volcanic cones, all of which bear traces of extinct craters at their summits. At the extreme western end, again, the mountains rise to nearly 3000 feet. The coast is steep and rocky, and in some places the cliffs are 1400 feet high.

There are several lakes in the mountains, formed for the most part by an accumulation of water in the extinct craters; the principal are the Lagoa Grande, in the Caldeira das Sete Cidades, the Lagoa do Fogo, and the Lagoa das Furnas. Goldfish (*Cyprinus auratus*), which have been introduced into these lakes, are extremely abundant, and attract considerable numbers of Gulls and Terns.

My brother had but a short time in St. Michael's, as he was obliged to return to England to join his regiment. I remained there rather more than a month, during which time I visited different parts of the island, and collected specimens of most of the resident species of birds. My headquarters were at the hotel in Ponta Delgada, a very comfortable house, and having the advantage of a most obliging English landlady.

We next went to Fayal, and thence visited the two most western islands. We left St. Michael's on the evening of the 21st of April, and at six o'clock next morning anchored in the harbour off Angra, the capital of Terceira. We passed the whole day on shore, as the steamer did not start again till night. This was the first really warm day we had had; and we made a long excursion into the interior. The scenery is not nearly so pretty as that of St. Michael's, which of its kind is not surpassed by any I have seen elsewhere. We returned on board in the evening, and at night the steamer again started for Graciosa, which we reached at six next morning. This is one of the

smallest of the Azores, and is very pretty; but as we only remained there about an hour, and anchored at a considerable distance from the shore, we did not land. We next proceeded to St. George's, and, passing close round under the high cliffs at the west end, called at Villa das Velas, on the south side, to land two or three passengers and a small amount of cargo.

Whilst coasting along this island we observed large flocks of "Cargaras," "Stapagados," "Garças," and "Pombas," evidently congregating for the breeding-season; and, judging from the rugged and precipitous rocks they had chosen for this purpose, I fancy they would run little risk of being disturbed. The south side of St. George's rises almost perpendicularly from the sea, but the inhabitants have nevertheless found sufficient space on some of the ledges of the rocks to plant vineyards. To many of these there is no approach from the land side, and the only means of getting at them is by landing from a boat and climbing on hands and knees up the almost perpendicular cliffs—which of course can only be done in fine weather with a calm sea.

From Villa das Velas to Horta, the capital of Fayal, is about forty miles; but as we did not arrive there till past eleven o'clock at night, we remained on board till next morning. Fayal is a charming little island; and the view from it of Pico, with its snowy top peeping out from the clouds (as we then occasionally saw it), is really a grand sight. Pico is more thickly wooded than most of the islands; the volcano rises to 7600 feet in height, and in the winter the extreme cone is frequently covered with a thin layer of snow. Descending lower, there is first a belt of cinders and but little vegetation except lichens; lower down again, the tree heath and coarse grass form another belt; while below this is a dense growth of brushwood, consisting of *laurustinus*, *faya*, and other evergreen trees. This is the home of the Wood-Pigeon in the Azores. In most of the other islands this bird is much persecuted, on account of its being greatly esteemed for the table, and it is consequently very scarce and wild; while here it is abundant, being comparatively undisturbed. Towards the coast, at the foot of the mountain, a network of walls encloses small vineyards to protect them against the winds. From these vineyards was formerly made the well-

known "Pico Madeira;" but for the last twelve years, in consequence of the vine-disease, they have yielded no fruit, causing a great loss to the poor inhabitants.

Whilst at Fayal, Mr. Dabney, the United States' Consul, kindly interested himself in assisting us to obtain a passage in a whaling vessel to Flores, an opportunity of which I gladly availed myself, the communication being very irregular and uncertain; in fact, during the previous winter, Corvo and Flores had been for five months without any communication with other places.

Mr. Brewer and I went on board the barque 'Henry Tarbert,' and, having a favourable breeze, in sixteen hours we sighted the south point of Flores; but on approaching the shore we found too heavy a surf to allow us to land; so we were obliged to cruise off and on, for three days more, till the swell had in some measure subsided. The sea being calmer, though a heavy surf was still rolling on the rocky shore, the captain ordered one of the whale-boats to be lowered and manned. We got into it with our baggage, and rowed in as near the rocks as we could, taking care to keep just outside the breakers. Numbers of people on land had been watching us; and as soon as they perceived that we intended to land, they flocked down to the shore, and completely lined the rocks. There were probably not less than three or four hundred persons. They beckoned to us to run our boat in behind a certain rock which they pointed out; but as the sea broke heavily upon it and appeared to dash all over it, our captain would not venture with his slight whale-boat, and signalled to them to send us off a boat to show us the way. This after some time they did; and a nasty landing it was. The boatmen, who certainly managed their craft very well, came out to us, and with some difficulty we got into their boat; then watching their opportunity, and following as close as possible after a huge breaker, they shot the boat round the corner of a rock into a small creek, which was a little sheltered from the full violence of the surf. We now had to jump out, which would have been no easy matter without the assistance of those on the rocks, who, as the swell of the waves raised our boat some eight or ten feet, made a snatch at us,

and we were all three pulled safely on shore. This was at Largens, a small town at the south point of the island; and from the ship it appeared the most sheltered spot we could find; but it was several miles distant from Sta. Cruz, the village we wanted to go to, and where we had letters of introduction to Dr. Mackay, H.B.M. Consul. My first idea was, that when once safely landed I should have no more boating; but this notion I was obliged to give up; for, on inquiry, I found the way by land was very bad and circuitous and that no beasts could be procured. More than this, the track being in many places along the ledge of the cliff overhanging the sea, I felt sure that my companion, who had not a good head for such places, would be unable to pass, even if I could do so.

After not a little bargaining, we agreed with some boatmen to row us to Sta. Cruz, in a large boat with eight oarsmen, the distance by water being about sixteen miles. Having transferred all our luggage to our new craft, and wished our late captain farewell, we started, keeping as near the shore as the breakers would allow. Sometimes we were on the crest of the wave, within a few feet of where it was actually breaking, and almost the moment we were over it the whole line of it where we had passed broke with a fearful roar behind us. Had the boatmen misjudged their distance once, nothing could have saved us. They certainly understand what they are about, but the way they do things is not such as to inspire strangers with confidence. When a larger and more ugly wave than usual comes, all talk at once, and each man gives his opinion as to what ought to be done, instead of obeying the master; and they will as soon listen to a boy of twelve years of age as to an old and experienced seaman. We reached Sta. Cruz in about four hours, but at first it was uncertain whether we could land here; however, some of the crew said we could, and, after watching our opportunity much in the same way as we did at Largens, the boat was run ashore behind the rocks. We proceeded at once to Mr. Mackay's house, accompanied by a large number of the inhabitants, and he soon found us a comfortable lodging in the town. Flores is much better watered than most of the islands, but less of the land is cultivated. In the mountains are several

lakes and a large swamp nearly two miles long by a mile broad, where I found Ducks, Teal, and Snipes breeding, though not in great numbers. Woodcocks also are very abundant, as they are little disturbed; in fact scarcely anyone here shoots. I remained in Flores rather more than a fortnight, during which time I walked all round the island, keeping as near the coast as possible; I also made several excursions to the lakes and swamp in the mountains; but, with the exception of the Purple Sandpiper and the Wheatear, of which I shall have more to say presently, I saw no birds I had not observed in the other islands I had visited.

The weather was still rough and uncertain; and as it was scarcely safe to visit Corvo in a small boat, though but sixteen miles from Sta. Cruz, I chartered a schooner of about thirty tons for this purpose, and spent two days on the island. It is a single volcano, containing a large crater with lakes, and rising rapidly from the sea. It has precipitous cliffs on all sides except in one spot, where both the village and landing-place are situated. It is but seldom visited; and after the other islands, there is not much of special interest to the general traveller. I returned again to Flores, and in a day or two afterwards left in the same schooner for Fayal. Here I remained some days, waiting for a favourable opportunity to ascend Pico; but though I made the attempt, the weather, unfortunately, would not admit of it, and I finally left for Terceira, calling at St. George's on my way, with some regret at not being able to accomplish this object. I spent a fortnight more here, and returned by the next steamer to Lisbon, waiting three days at St. Michael's on my way, just time enough to get my collection together, and wish my friends good-bye. Thence sending most of my things direct home, I made a short tour through Portugal, and then returned to England.

The following is a list of birds collected or observed during my visit: those marked with a dagger (†) I believe to be stragglers; the rest are residents.

†TINNUNCULUS ALAUDARIUS, G. R. Gray.

I obtained a single specimen of this species through Mr. G.

Brown, of St. Michael's, who kindly preserved it for me. It is not a resident in the Azores, though in Madeira Mr. Vernon-Harcourt says it is very common*.

BUTEO VULGARIS, Bechstein. "Milhavre."

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Very common in the eastern and central groups, but scarcely ever seen in Flores or Corvo. I found a pair building in a cliff near the sea on the 22nd of March, in St. Michael's, and shot both the old birds. Mr. Gurney, who has kindly examined them for me, says that they are unusually rufous on the under parts of the body, and that they consequently bear a considerable resemblance to the immature dress of the ordinary Buzzard of Barbary, *Buteo desertorum* (Daudin). In size, however, they agree with *B. vulgaris*, which is rather the larger bird of the two. In the Azores Buzzards are by no means shy, and may constantly be seen hovering over the towns or perching in the orange-gardens. They feed chiefly on young rabbits, rats, and mice, of which there is a great abundance. It is from this bird the islands take the name of Azores†.

ASIO OTUS (Linnæus).

Only a single example of this species came under my notice. Mr. Dabney procured it in Fayal during my absence in Flores, and kindly had it preserved for me. It was a very young bird, and was brought to him by a boy who took it from the nest. I had frequently heard of it in St. Michael's; but it is nowhere common, and I never met with it living.

STRIX FLAMMEA, Linnæus. "Coruja."

Occasionally met with in the eastern and central groups. In Flores and Corvo I did not find anyone who either knew the bird or the Portuguese name for it; hence I conclude it does not extend to these outer islands. Several people in St. Michael's and Terceira told me they had seen it, but I was unable to procure a specimen. The captain of a whaling-vessel told me that one flew on board his ship when about 500 miles S.W. of the

* See "Notes on the Ornithology of Madeira" in Annals and Magazine of Natural History, 2nd ser. vol. xv. pp. 430-438.

† Açor, in Portuguese, is properly the Kite (*Milvus ictinus*), for which species no doubt the early explorers mistook this bird.

Azores. It was much exhausted, but he kept it alive on salt pork for three or four days.

TURDUS MERULA, Linnæus. "Melro."

Frequents the mountain-districts rather than the gardens and low country. It is very common, but shy. The note always struck me as harsher and louder than our Blackbird's, but I find no difference in the size or form of the two birds.

†ORIOIUS GALBULA, Linnæus.

Whilst I was in Flores a bird I believe to have been of this species was caught and killed by some boys, who plucked all its feathers out and threw it away. I did not hear of it till the following day, when I went immediately to the village, but could procure no more than its tail- and wing-feathers, from which, together with the description I received, I do not hesitate to attribute it to this species.

ERYTHACUS RUBECULA (Linnæus). "Avinagreira."

Though common in the eastern and central groups, the Red-breast does not occur in the two western islands. Through the kindness of some of my friends I have been able to compare my specimens with examples from Algeria, Tunis, and Southern Italy, with which I find that they exactly agree in their light-coloured plumage. Mr. Gould showed me one he shot in Teneriffe, which is precisely similar to our British and darker form.

SYLVIA ATRICAPILLA (Linnæus). "Toutinegro."

Abundant in the lower lands throughout the islands. A curious variety is not unfrequently met with, having the black marking on the head extending to the shoulders and round under the throat. I only saw one individual, which was in a cage with a common Blackcap. It appeared to be slightly larger, though in other respects the same, with the exception, of course, of the dark markings. I was told that some individuals have the whole of the under parts of the body black. The story current in the Azores with regard to them is, that, when the parent lays more than four eggs, one bird always proves to be this variety*. In Fayal it is known by the name "Avina-

* [This variety is doubtless the same as that mentioned by Heineken

greira," a term given to the Redbreast in St. Michael's. It is much prized by the Portuguese, who are fond of keeping it as a cage-bird.

REGULUS CRISTATUS (Linnæus). "Estrellinha."

Frequents chiefly the junipers (*Juniperus oxycedrus*) and tree heaths (*Erica azorica*) in the mountains, and is but seldom seen in the gardens or lower country. I have compared my examples with British and South European specimens, and find that the former are rather stouter and stronger in the beak and legs, and also somewhat longer in the tail. Mr. Gould showed me a Golden-crested Wren from Eastern Asia which agrees with my Azorean bird in all respects.

SAXICOLA CENANTHE (Linnæus).

I shot a single example of the Wheatear in Flores, after a strong gale of wind, and I at first believed it was a straggler from the continent; but I afterwards found four or five pairs in the old crater on Corvo, which had bred there, as I saw young birds that could scarcely fly. The inhabitants have no name for this bird, and I did not meet with any one who knew it; so I believe it to be a recent settler.

MOTACILLA SULPHUREA, Bechstein. "Alveola" or "Lavadiera."

Common, wherever there is water, throughout all the islands. I have compared it with European specimens, with which it agrees well, with the exception of the tail being rather shorter. Mr. Gould, however, showed me some examples from Eastern Asia which in this respect are exactly the same as the Azorean bird. It is resident the whole year.

†PLECTROPHANES NIVALIS (Linnæus).

A flock of about twenty of these birds appeared last winter in the island of Corvo. They were said to have been much exhausted when they arrived, and several were caught and kept

(Zool. Journ. v. pp. 75-79) as occurring in Madeira, where a similar story is also told concerning its origin. It was subsequently described by Sir W. Jardine (Edinb. Journ. Nat. & Geog. Science, Jan. 1830, i. p. 243), and figured by him and Mr. Selby in their 'Illustrations of Ornithology,' pl. 94, under the name of *Curruca heinekeni*.—ED.]

in cages. At the time I was there I believe there was but one living, and this was a female. The owner had such an exalted notion of its value that I did not procure it, but contented myself by making a coloured drawing of it.

FRINGILLA MORELETI, Pucheran. "Tintilhão."

First brought from the Azores by M. Morelet in 1857, and named by M. Pucheran after its discoverer. It is the representative of our Chaffinch (*F. cælebs*), whose habits it much resembles. From the description, it must be exceedingly like *F. tintillon* of Webb and Berthelot from the Canaries, but at present I have not been able to get a specimen of this latter bird for comparison. Its nearest continental ally seems to be the Algerian *F. spodiogena*, Bonaparte, from which, however, it differs considerably. It is distributed throughout all the islands of the archipelago, and is very common. Its nest is built of moss, lined with wool, and is not so neatly made as that of our Chaffinch. It lays four or five eggs, marked with brown spots, like those of *F. cælebs*, but rather larger.

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PYRRHULA MURINA, sp. nov. "Prior." (Plate III.)

Major; subtus murinus, uropygio cinereo, rostro pedibusque validissimis.

♂. Capite toto ad nucham et mento, alis caudaque nigris, purpurascente tinctis, his nitentioribus; dorso et corpore toto subtus murinis, illo obscuriore, ventre medio vix aurantiaco tincto, tectricibus minoribus et fascia alari cum uropygio cinereis, hoc paulo dilutiore; macula alari ferruginea ut in aliis hujus generis speciebus.

♀. Mari omnio similis, sed pectore magis cinereo, et colore aurantiaco carente.

Long. tot. 6·5, alæ 3·4, caudæ 3, tarsi ·8, dig. med. ·9, ung. ·25, poll. angl.

Hab. Ins. Scti. Michaelis, Azorensi.

Synon. *Pyrrhula coccinea*, Pucheran, 'l'Institut,' No. 1310, Feb. 9, 1859; *Rev. Zool.* 1859, p. 413 (*minime* De Selys-Longchamps, *Faun. Belg.* p. 79, *nec* auctt. cætt.).

M. Morelet brought away but one specimen of this bird from the Azores, and M. Pucheran refers it to *P. coccinea* of De Selys-Longchamps*, the female of which it somewhat resembles; but it is entirely different in appearance from the male ^{of} that species, not

* Cf. 'Ibis,' 1859, p. 322; 1860, p. 93; et 1861, p. 401.

having the red breast or white rump, which last character is also shared by the female. It is therefore necessary to confer on the present bird a new name, and I have chosen one which is, I trust, sufficiently expressive, as the accompanying figure will show.

In habits the Bullfinch of the Azores resembles our *P. vulgaris*, feeding principally upon insects and the buds of trees. I believe that it is confined to the mountainous parts of St. Michael's, where it is tolerably abundant. It is so tame that it takes but little notice of the report of a gun, and I shot thirteen individuals in the same poplar tree in a few minutes. I know nothing of its breeding-habits, as I was not in the island at the right time of year, and it is difficult to obtain accurate information from the inhabitants.

SERINUS HORTULANUS, Koch. "Canario."

Found in abundance throughout the Azores. It frequents the cultivated lands, where it feeds on the seed-crops, and is especially destructive to the flax. It is by no means a bad songster, and is therefore often caught and tamed, a great many being sold on board vessels which touch at the islands for provisions. In Fayal these birds congregate towards evening in considerable numbers about a small hill near Horta, and fly across in a body to the island of Pico; for what reason I do not know, as there is no want of trees in the neighbourhood. I have compared my specimens with some from Algiers, Tunis, and Sicily. The birds from the Azores are rather darker in plumage, slightly stouter, and have stronger legs and beaks, but there is scarcely difference enough to separate them specifically.

STURNUS VULGARIS, Linnæus. "Esturninho."

Plentiful throughout all the islands of the archipelago. It breeds principally in the sea-cliffs, and is precisely similar to European examples. When vines were more cultivated it was much destroyed, as it was said to feed upon the grapes and to do much mischief in the vineyards; lately, however, it has not been persecuted, and has greatly increased in numbers.

DRYOBATES MINOR (Linnæus). "Picapoa."

This bird is very uncommon, but is occasionally met with in the mountains in St. Michael's, and, I believe, also in Terceira.

I was unable to procure a specimen, and did not meet with it myself. Mr. Brewer tells me that after I left for England he saw one at the Furnas and watched it for some time, and has no doubt as to the species. M. Morelet gives *Picus major* in his list of the Birds of the Azores; but I am not aware that he ever obtained specimens, and I am inclined to think that there is but one species resident.

†UPUPA EPOPS, Linnæus.

I saw a single example in a collection at Terceira. It had been killed in that island some years previously. It has also been met with in St. Michael's.

? COLUMBA PALUMBUS, Linnæus. "Pomba troqual."

As I never succeeded in obtaining a specimen of this bird, I am unable to say whether it is the true *C. palumbus* or the *C. trocaz* of Dr. Heineken (*C. lawivora*, Webb & Berth.). It is only found in the eastern and central groups, and is very rare in St. Michael's. I saw several in Pico, where, being less shot at, it is not so shy. I also saw it in St. George's and Fayal. On the wing, I could observe no difference between it and our European species.

COLUMBA LIVIA, Linnæus. "Pomba da rocha."

Exceedingly common throughout the archipelago. It breeds in great numbers in the rocky cliffs along the coast. Most of my examples are very dark in plumage—so much so, indeed, that the band on the wings is no longer visible. I saw, however, two quite white individuals, but not a single one of the pale grey tint usually found elsewhere. I find that Mr. Vernon-Harcourt mentions a dark variety in Madeira.

CACCABIS RUFA (Linnæus). "Perdix."

I had unfortunately no opportunity of visiting St. Mary's, in the mountains of which the Red-legged Partridge is said to be very abundant. Mr. Brewer, who went there after I left, procured me two examples. They were in very bad plumage, but I believe them to be identical with the *C. rufa* of Europe. It is occasionally found in St. Michael's and Terceira.

COTURNIX COMMUNIS, Bonnaterre. "Cordonix."

Plentiful in the cultivated lands on all the islands, and even

in the gardens. It is not migratory here, and is said to have two and sometimes even three nests in the year. It is certainly exceedingly numerous, and affords excellent sport; on one occasion a Portuguese gentleman and I killed 157 in a few hours.

ÆGIALITES CANTIANUS (Latham). “Maçarico.”

I met with a few birds of this species about the lakes in St. Michael's; but afterwards found them more plentiful about Capellas, in Fayal, and on the high ground between Angra and Praya, in Terceira. The Portuguese name “Maçarico” or “Maçanico” is applied more or less to all Sandpipers and Snipes, as well as to this species. It breeds in Terceira, as I saw several young birds about, which were unable to fly.

†*VANELLUS CRISTATUS*, Meyer.

I saw a single stuffed specimen in the collection of a gentleman at Angra. He informed me that it had been shot in Terceira. Mr. Alfred Newton tells me he has a specimen from Madeira.

STREPSILAS INTERPRES (Linnæus).

A few pairs are always to be found about the rocks between Santa Cruz and Ponta Delgada, in Flores. I killed some specimens in June in full breeding-plumage, and I suspect that it must breed on some of the small islands near the coast; but the weather was so stormy all the time I was in Flores, that I was unable to get out to them. It is said to remain there the whole year. I afterwards saw eight birds of this species near Capellas, in Fayal, and I believe a few are to be found on the coast of any of the islands where the rocks provide sufficient protection from the surf.

ARDEA CINEREA, Linnæus. “Garça real.”

This is the only resident species of Heron. A few pairs are always to be met with about the lakes in St. Michael's, and occasionally on the coasts of the other islands; but the sea is in most places too deep for them to fish from the shore. I shot a single specimen in St. Michael's, at the Sete Cidades, and saw the remains of an immature bird that had been killed some time previously, which leads me to believe that the species occasionally breeds there, though I could obtain no information as to the fact.

†ARDEA PURPUREA (Linnæus).

†ARDEA ALBA (Linnæus).

†ARDEA GARZETTA (Linnæus).

I saw examples of these three species in a collection in Terceira, said to have been killed in that island.

†ARDETTA MINUTA (Linnæus).

†BOTAURUS STELLARIS (Linnæus).

Also in the same collection. One of the latter species was killed in St. Michael's.

†PLATALEA LEUCORODIA (Linnæus).

A Portuguese gentleman in St. Michael's told me that five or six examples of this species had been shot at Sete Cidades a few years previously.

NUMENIUS ARQUATA (Linnæus). }
NUMENIUS PHÆOPUS (Linnæus). } "Maçanico real."

These two species are occasionally found about the coasts. I saw them both, but I much doubt their breeding there regularly.

SCOLOPAX RUSTICOLA, Linnæus. "Galinholá."

In all the mountain-districts throughout the islands this bird is not uncommon. It breeds, as with us, early in March, as I found young birds in the beginning of April, whilst out rabbit-shooting. The native sportsmen (!) shoot them while flying of an evening. It is most abundant in St. George's, Pico, and Flores, where few people kill them.

GALLINAGO MEDIA, Leach. "Maçanico real."

A few are occasionally found about the streams and wet places in the mountains. In Flores I saw four or five pairs on a large marsh, where I have no doubt they were breeding, though I did not see a nest. This species is called by the same name as the Curlew and Whimbrel.

TRINGA MARITIMA, Brünnich.

A small flock was usually to be seen in company with some Turnstones about the rocks near Santa Cruz, in Flores. I was told that in summer they are frequently seen upon the rough pasture-land high up in the mountains. The people say they

go there to feed in hot weather ; but I suspect they breed there as well, since a lad at Santa Cruz told me that he had shot very young birds. No one, however, that I met with could give me any information about their nesting-habits. The only specimen I procured was a male in full summer-plumage, and was shot in June.

†CREX PRATENSIS, Bechstein.

Mr. J. Dabney showed me a stuffed Corn-Crake, which was killed two or three years previously by flying against a window of his house. I also saw another stuffed specimen in a collection in Angra, said to have been killed in Terceira. The distances to which this short-winged bird occasionally wanders are sufficiently remarkable, since it has occurred in the Bermudas, the United States, and even Greenland.

GALLINULA CHLOROPUS (Linnæus).

FULICA ATRA, Linnæus.

Both these species are to be found in St. Michael's, on the Lagoa do Fogo. I believe they were originally introduced into the islands, and I am not aware that they are found in any other locality.

ANAS BOSCHAS, Linnæus. "Patos."

A few are to be found about all the lakes throughout the islands ; they are, however, very shy. In Flores I saw several in the mountain-lakes and about the marsh, where they breed. In winter they say that several other kinds of Ducks occur ; but I only saw those mentioned in this list.

ANAS CRECCA, Linnæus. "Mareca."

Like the last species a few are found everywhere ; and it breeds in Flores, but is not quite so common as *A. boschas*.

? CÆDEMIA NIGRA (Linnæus).

I saw a black Duck on the lake at the Furnas in St. Michael's, which I believe belonged to this species.

†MERGULUS ALLE (Linnæus).

There is a single specimen in the collection of a gentleman in Terceira, which was killed in the island four or five years ago.

STERNA FLUVIATILIS, Naumann. "Carajão."

This and the following species are the only two real migrants

in the Azores. The Common Tern comes about the middle of April, and is to be seen in considerable numbers about the sea-coast and mountain-lakes, departing, I was told, about the middle of September. It breeds on the small islands about the sea-coast.

STERNA DOUGALLI, Latham. "Carajão."

Mr. S. Dabney, of Fayal, told me that when he was in Flores, about the year 1855, he shot several Terns with pink breasts. During my visit to that island I kept a sharp look out for them, but did not see any, nor could I find any one amongst the inhabitants who knew the bird, though *S. fluviatilis* was common enough. On my return to Fayal, I one day took a walk to Castello Branco, a large high rock almost detached from the mainland. There were a great many Gulls and Common Terns flying about; and whilst I was watching them as they flew along the side of the cliff, I noticed five or six Roseate Terns amongst them; some of these came within a few yards of me, but I did not shoot at them, as they would have fallen into the sea at the foot of the cliff, where I could not have picked them up. I suspect this species arrives later than the Common Tern, as I afterwards saw several more near the west point of the same island.

RISSA TRIDACTYLA (Linnæus).

There were a few Kittiwakes about the harbour of Ponta Delgada when I first arrived; but I did not see them elsewhere. The master of one of the fruit-schooners told me that this and the next species frequently followed their vessels for the whole of the voyage from England. I do not know that it breeds in the Azores.

LARUS ARGENTATUS, Linnæus. "Garça branco."

Common everywhere about the sea-coasts and mountain-lakes. Some remain throughout the year, though there are said to be more in summer than in winter. They breed about the coast, and particularly on a small island about a quarter of a mile from the south-west point of Fayal, which in June was quite covered with them.

PUFFINUS MAJOR, Faber. "Cargara."

To be seen throughout the archipelago. It breeds, in holes

in the cliffs, about the end of May. One bird that I shot contained an egg almost ready for exclusion.

PUFFINUS ANGLORUM, Boie. "Stapagado."

Not so numerous as the last species; like it, however, it breeds in holes in the cliffs, in May, and is esteemed by the inhabitants as an article of food. The specimens I procured were wonderfully fat, and the eggs in the ovaries of two females were in an advanced stage.

? PUFFINUS OBSCURUS (Gmelin). "Fruho."

People living in the island of Flores told me that there was a smaller bird than the last species, but similar in form, colour, and habits. I hence conclude it is *P. obscurus*. It is said to arrive about the month of March, and to breed in the cliffs. It had reared its young and gone again before I was there, and I did not obtain or even see a specimen; neither did I hear of it in the other islands. The natives frequently bring up young birds of this kind tame, as they afford amusement from their grotesque manner of waddling about.

THALASSIDROMA WILSONI, Bonaparte. "Alma de mestre."

On returning from Flores to Fayal we were becalmed for some hours; and as there were a good many Petrels flying about, I took the boat belonging to the schooner and shot some. They were all of this species, nor did I see any other in the archipelago. In flying they carry their legs stretched straight out behind them, and their feet protruded about an inch beyond the tail, producing the effect of two long feathers. I know nothing about this species breeding in the archipelago, though I suspect it does, as it remains throughout the year.

M. Morelet* is the only naturalist, that I am aware of, who has visited the Azores and written upon their ornithology; but his *spécialité* being conchology, the birds did not receive so much of his attention as they deserved. He gives, however, an enumeration of thirty species which he considers to belong to the islands. My own experience leads me to modify this list, as some species contained in it are certainly stragglers,

* Notice sur l'histoire naturelle des Açores, par A. Morelet. Paris, 1850.

whilst other residents must be included. On reference to M. Pucheran's paper in the 'Revue et Magasin de Zoologie' for 1859 (vol. xi. p. 409), it would appear that M. Morelet actually obtained only four specimens of birds from these islands, whence I infer that the rest of his list was formed from observations casually made, and not corroborated by the collection and collation of specimens. That my own catalogue includes all the stragglers, I do not pretend to say; on the contrary, I have no doubt that the number may be considerably extended; but with regard to the residents, I believe it will be found tolerably correct. Scarcely a storm occurs in spring or autumn without bringing one or more species foreign to the islands—a fact well known to many of the inhabitants; and I have been frequently told that Swallows, Larks, Grebes, and other species not referred to here, are not uncommonly seen at those seasons of the year.

The ornithology of these islands, and distribution of the birds amongst the several groups, seem to furnish strong evidence against the supposition that the Azores ever formed a portion of an old continent, which is the theory of Professor Edward Forbes. Were these volcanic rocks the remaining peaks of former continental mountains, should we not expect to find a number of land-birds concentrated upon them, modified perhaps (had sufficient time elapsed) from the species representing them on the present continent of Europe or its adjuncts? whereas the Chaffinch (*Fringilla moreleti*) and Bullfinch (*Pyrrhula murina*) are the only birds that at all aid this view; and the facts of their isolation and difference from their continental representatives can more easily be accounted for by supposing them to have arrived at a remote period of time through the same cause that now brings stragglers from Europe or North Africa, and that subsequent modification has altered them to what we find them to be at present. This cause I imagine to be, the prevalence of *storms*. No contrast could perhaps be stronger than between the Azores and the Galapagos as regards the climate each group possesses. Apparently similar in their origin—both the production of a series of volcanic eruptions—and similar, also, to some extent, in their position as regards the continents of Europe and South America, the former are subject to con-

stant and violent storms, which blow from all points of the compass, while the latter enjoy almost uninterrupted calms (Darwin's 'Origin of Species,' p. 433). Currents flow in varying directions round the Azores, being apparently influenced by the prevailing winds, while those of the Galapagos are strong and unvarying. The results are apparent. The storms which surround the Azores not only maintain, as it were, a circulation of the established species, but constantly bring a fresh stock from the different sources of supply. On the other hand, the calm weather and strong currents of the Galapagos not only sustain the isolation of that group from the continent of South America, but even almost preclude the existence of intercommunication among the islands in sight of each other.

Subjoined is a comparative list, showing the distribution of birds throughout the three groups of islands forming the archipelago of the Azores as I have previously defined them:—

TABLE showing the distribution of birds in the Azores*.

	Eastern group.	Central group.	Western group.	General range of the species.
†Tinnunculus alaudarius	*	Africa, Europe, Madeira.
Buteo vulgaris.....	*	*	..	Europe, Madeira.
Asio otus.....	*	*	..	Europe.
Strix flammea.....	*	*	..	Africa, Europe, Madeira.
Turdus merula.....	*	*	*	N. Africa, Europe, Madeira.
†Oriolus galbula.....	*	N. Africa, Europe, <i>Madeira</i> .
Erythacus rubecula, var.	*	*	..	N. Africa, S. Eur., Madeira.
Sylvia atricapilla.....	*	*	*	Europe, Madeira.
Regulus cristatus.....	*	*	*	Europe, North Asia.
Saxicola œnanthe....	*	North Africa, Europe, Iceland, Greenland, <i>Labrador</i> , <i>Nova Scotia</i> .
Motacilla sulphurea ..	*	*	*	Asia, Europe, Madeira.

* The dagger (†) prefixed before the name of a species signifies that it is a straggler, and not a resident. The names of places in the last column in *italics* signify that the appearance of the species there can only be considered occasional. With regard to this list, I should mention that six species included in the Central group I saw in a collection made by a gentleman in Terceira; therefore, in order to arrive at the correct proportion, these should be subtracted, and the numbers would then stand:—Eastern Group, 40; Central, 36; Western, 29.

TABLE (continued).

	Eastern group.	Central group.	Western group.	General range of the species.
†Plectrophanes nivalis . . .	..	..	*	N. Europe, Iceland, Greenland, N. America.
Fringilla moreleti	*	*	*	} Peculiar to the Azores.
Pyrrhula murina . . . . .	*	..	..
Serinus hortulanus	*	*	*	N. Africa, S. Europe.
Sturnus vulgaris	*	*	*	Europe, <i>Madeira</i> .
Dryobates minor	*	?	..	Europe.
†Upupa epops	*	*	..	N. Africa, Europe, <i>Madeira</i> .
Columba palumbus ?	*	*	..	N. Africa, Europe, <i>Madeira</i> .
„ livia, var.	*	*	*	N. Africa, Europe, <i>Madeira</i> .
Caccabis rufa	*	*	..	W. Europe, <i>Madeira</i> .
Coturnix communis.	*	*	*	Africa, Eur., Asia, <i>Madeira</i> .
Ægialites cantianus	*	*	..	Old World.
†Vanellus cristatus . . . . .	..	*	..	N. Africa, Europe, <i>Madeira</i> , <i>Iceland</i> .
Streptilas interpres	*	*	*	Cosmopolitan.
Ardea cinerea	*	*	..	Europe, <i>Madeira</i> .
† „ purpurea . . . . .	..	*	..	N. Africa, Europe, <i>Madeira</i> .
† „ egretta <i>alba</i> . . . . .	..	*	..	S.E. Europe.
† „ garzetta . . . . .	..	*	..	Africa, S. Europe.
†Ardetta minuta . . . . .	..	*	..	Europe, <i>Madeira</i> .
†Botaurus stellaris	*	*	..	Europe, <i>Madeira</i> .
†Platalea leucorodia . . . . .	*	..	..	N. Africa, Europe, <i>Madeira</i> .
Numenius arquata	*	*	*	N. Africa, Europe, <i>Madeira</i> .
„ phæopus.	*	*	*	Africa, Europe, <i>Madeira</i> .
Scolopax rusticola	*	*	*	Europe, <i>Madeira</i> .
Gallinago media	*	*	*	N. Africa, Europe, <i>Madeira</i> .
Tringa maritima . . . . .	..	..	*	N. Europe, Greenland, N. America.
†Crex pratensis. . . . .	..	*	..	Europe, <i>Madeira</i> , <i>Bermudas</i> , <i>United States</i> , <i>Greenland</i> .
Gallinula chloropus. . . . .	*	..	..	N. Africa, Europe, <i>Madeira</i> .
Fulica atra . . . . .	*	..	..	N. Africa, Europe, <i>Iceland</i> , <i>Madeira</i> . [rica.
Anas boschas	*	*	*	N. Africa, Europe, N. Ame-
„ crecca.	*	*	*	N. Africa, Europe, <i>Madeira</i> , <i>N. America</i> .
Edemia nigra	*	*	*	Europe.
†Mergulus alle . . . . .	..	*	..	N. Europe, N. America.
Sterna fluviatilis	*	*	*	Europe, <i>Madeira</i> .
„ dougalli	?	*	*	Africa, Europe, <i>Madeira</i> , <i>America</i> .
Rissa tridactyla	*	*	*	N. Europe, N. America.
Larus argentatus.	*	*	*	Europe, <i>Madeira</i> .
Puffinus major.	*	*	*	} Azorean seas, Europe.
„ anglorum	*	*	*	
„ obscurus ?	*	*	*	
Thalassidroma wilsoni.	*	*	*	N.E. America, <i>Europe</i> .
	40	42	29	

A glance at the foregoing list at once shows its entirely European stamp. Every species, except *Thalassidroma wilsoni*, an oceanic wanderer of the North-western Atlantic, is to be found in Europe, or in the outlying provinces of the European fauna—North Africa, the Madeiras, and Canaries. From this generalization two more exceptions must be made,—one in the case of the Chaffinch, which has its nearest and very close ally in the *Fringilla tintillon* of the Madeiras and Canaries; and the Bullfinch, to which *Pyrrhula europæa* or *P. coccinea* must be considered most nearly affined. Both these species seem peculiar to the group. As regards the local peculiarities of Azorean birds, there is certainly a tendency among them to vary, more or less, from their continental representatives. This is especially shown by the former always having darker plumage and stronger bills and legs. In some cases the variation is not greater than may be observed in extreme examples from a large series of continental specimens of the same species; in others it becomes more remarkable, and in *Fringilla moreleti* and *Pyrrhula murina* the exaggeration is carried to such an extent that it is impossible to speak of them but as good species.

The list further shows the gradual falling off in the number of species inhabiting each group of the archipelago as we proceed westward and away from the Old World. Before making this comparison, it seems necessary to take into consideration what species should properly be included. I think that when we find birds having in most places habits so essentially migratory, as the Quail, Woodcock, and Snipe, here becoming resident throughout the year, and losing their wandering instincts from the necessity of their situation, we may fairly except from our calculation the Gulls, Terns, and Petrels, for which these islands simply afford a resting-place in their wanderings, and a resort during the breeding-season. All others would appear, I think, to have arrived involuntarily, having been blown over by storms, or through some other such agency. The Eastern group has forty species, the Central thirty-six, and the Western twenty-nine; so that we have a gradual diminution of the number of species as we proceed westward from the Palæarctic fauna. This seems clearly to show that storms or other external causes

have been the means of peopling these islands with bird-life. That the nearest group has caught the most stragglers must be admitted; and that storms do bring stragglers, the occurrence, as I have mentioned, of such birds as the Snow-Bunting and Golden Oriole shows. It also seems tolerably certain that, were it not for the constant persecution carried on by the inhabitants, many species, arriving in sufficient numbers, would be able to establish themselves as permanent residents; and a few years would add, from this source alone, some accession to the legitimate avifauna of these islands. But hundreds of Serins are caught for cages, and the Red-legged Partridge has been exterminated for the table in St. Michael's; it may therefore be not unjustly inferred that other species have been affected in like manner.

Three months is not sufficient time to investigate thoroughly an archipelago consisting of nine islands, situated so widely apart as the Azores are from each other; and that a great deal still remains to be done I am well aware. I would gladly direct the attention of other naturalists to this field, and I am sure they would not regret a visit to a spot to which I myself look back with so much pleasure.

VIII.—Note on "*Kittacincla auricularis*," Swinhoe.

By P. L. SCLATER, M.A., Ph.D., F.R.S., &c.

(Plate IV.)

ONE of the most beautiful and not the least interesting of Mr. Swinhoe's more recent discoveries in Formosa is the bird of which a figure is herewith given from Mr. Wolf's pencil*. It has been described by its energetic discoverer in a former volume of this journal † under the name "*Kittacincla auricularis*," but can, I think, hardly be allowed to be called permanently by this designation, even if Mr. Swinhoe's views as to the validity of the genus "*Kittacincla*" (lege *Cittocincla*), as distinct from *Copsychus*, be correct. In fact I do not consider that the present bird is very closely connected with the group in which Mr. Swinhoe has placed it. According to my ideas it belongs strictly

* [We are indebted to the kindness of our good friend M. Jules Verreaux for the opportunity of figuring the type specimen of this species.—ED.]

† Ibis, 1864, p. 361. ✓