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EDITED BY

J. E. HARTING, F.L.S., F.Z.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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P R E F A C E.

WITH the issue of the December number the sixteenth volume of the present series of 'The Zoologist' is brought to a close.

The year 1892 has not been a remarkably eventful one for naturalists, although it may be predicted that in the annals of history it will be noted, according to precedent, as the year in which an extraordinary plague of Field Mice (*Arvicola agrestis*) overran the hill pastures of the south of Scotland. Some account of this was given in 'The Zoologist' for May last, supplemented in September by the Reports of Professor Loeffler, of Greifswald, on the experiments made by him with a view to combat a similar plague which has prevailed during the present year in Thessaly. In destroying these little pests, by digging out the nests and devouring the young, the great utility of the Rook has been well shown by our correspondent Mr. H. M. Bernard (p. 355), and was amply demonstrated in the evidence taken in Scotland by the Committee of the Board of Agriculture, whose Report on this subject is on the eve of publication.

Amongst birds which have attracted more than usual attention during the current year, two species may be especially mentioned, the Quail and the Ruddy Sheldrake. The former has been reported to have been met with by sportsmen in unusual numbers in September, and the discovery of more than an average number of nests with eggs has been also announced; the latter, hitherto regarded as a purely introduced species, has made its appearance in small flocks in so many different parts of the United Kingdom as to suggest the possibility of their being genuine immigrants, and not escaped birds. The evidence on the subject has been summarised and dealt with by Mr. F. M. Ogilvie (pp. 392—398).

In reviewing the *status* of the Gull Bunting (pp. 121, 174) and the Woodchat (p. 345) as British birds, Mr. O. V. Aplin has done good service, and it may be clearly seen from his statistics what is now the actual distribution of each.

Amongst the rarer birds met with during the year the following have been reported:—Spotted Eagle, Serin, Barred Warbler, Yellow-browed Warbler, Woodchat, Pectoral Sandpiper, Macqueen's Bustard, and Iceland and Sabine's Gulls. In Ireland the occurrence has been

noted of the Pink-footed Goose, Roller, Bee-eater, and Spotted Redshank.

The observations of the Rev. W. Warde Fowler (pp, 303—309) tend to prove that the Marsh Warbler (*Acrocephalus palustris*), hitherto regarded as a rare summer visitor to England, is in all probability an annual migrant, and either generally overlooked or confounded with its congener the Reed Warbler.

Dr. Klein's researches into the nature of the so-called grouse-disease have thrown a new light upon this obscure and much-debated epidemic, and his book on the subject, of which a notice has been given (pp. 337—341), should be read by every naturalist who is also a sportsman.

More attention than usual has been paid to the rarer British Bats, and to the smaller Mammalia generally, during the past twelve months, in consequence of which the geographical range of certain species has been extended, and useful additions made to our knowledge of their habits.

Reptiles and Batrachians, to the majority of observers, are never so attractive as other forms of life; we are all the more grateful, therefore, for such contributions as those of Mr. Norman Douglass and Mr. G. A. Boulenger.

Amongst Fishes, several marine species have been reported which are not commonly met with on our coasts, such as the Bonito, the Greenland Shark, the Æquoreal Pipe-fish, and the curious little *Leptocephalus morrisii*, two specimens of which were found by our observant correspondent Mr. Robert Warren, on the coast of Mayo.

Amongst Crustacea, also, the same observer has met with some uncommon forms on the coast of Sligo. Mr. Chichester Hart's 'Notes on the Marine Mollusca of Donegal,' extending through four numbers of this Journal, supply some useful additions to our knowledge of the distribution of species in Ireland.

Nor has Entomology been altogether neglected, notwithstanding the existence of Journals which are devoted to its consideration. The unusual abundance in 1892 of *Cynthia cardui* and *Tortrix viridana*, of the Mangel-wurzel Fly and the Mustard Beetle, has been duly noted and commented on.

The Editor, therefore, finds good cause to thank his contributors for the number and variety of their communications during the past year, and to express the hope that he may be similarly favoured during the year to come.

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THE ALLEGED FORMER NESTING OF THE OSPREY IN THE ENGLISH LAKE DISTRICT.

BY A. G. MORE, F.L.S.

THE approaching publication of a Fauna of the English Lake District leads me to offer a few remarks on a subject which has already been treated at some length by the Rev. H. A. Macpherson, in 'The Zoologist' for 1889 (p. 256), and as my name is there mentioned in a foot-note, I wish to explain, in as few words as possible, how the matter seems to me to stand.

Willughby, in his 'Catalogue of English Birds' (Book I. chap. ix. of "The Ornithology," p. 21), gives three species, viz.:—

1. "The Eagle," called also on p. 58 the "Golden Eagle" (*Aquila chrysaëtus*).
2. "The Sea-Eagle or Osprey, *Haliæetus sive Ossifraga*" (*Haliæetus albicilla*).
3. "The Bald Buzzard, *Balbusardus Anglorum*" (*Pandion haliæetus*).

It is under the "Sea-Eagle or Osprey" that Willughby speaks of the aery in Whinfield Park, Westmoreland. Pennant also, as well as the best recent authorities, refer this nest to the White-tailed Eagle, for, if it had belonged to the Osprey, Willughby would have mentioned it under his "Bald Buzzard." So far, then, from stating distinctly that *Pandion haliæetus* used to breed in Westmoreland, it is clear that Willughby was referring

to the White-tailed Eagle. Nor is Mr. Macpherson's objection fatal, that there are no precipices in Whinfield Park, for, like the Osprey, the White-tailed Eagle is well known to build occasionally on trees: and, if head-money was, at the time, offered for the destruction of Eagles, so much the more need would there be for preservation on the part of the Countess of Pembroke, especially if the nest was placed in a situation so exposed as a tall tree.

Dr. Heysham, in his Catalogue of Cumberland Animals prefixed to the 'History and Antiquities of Cumberland' (1794), includes only two Eagles, these being (2), the "Cinereous or White-tailed Eagle," breeding among the rocks near Keswick every year; and (1), the "Sea-Eagle, *Falco ossifragus*," of which there used, a few years previously, to be an annual nest at Ullswater, from which a trout upwards of ten pounds weight was taken. Here again the Sea-Eagle, is clearly *H. albicilla*, and further there can be little doubt that this nest belonged to the White-tailed Eagle, because in Latham's 'Synopsis,'—Supplement, p. 11 (1787),—under "Cinereous Eagle," the same or a similar story is told, on the authority of Dr. Heysham, relating to an Eagle whose tail became white after six or seven years in captivity. Latham's exact words are:—"In a nest of one of these birds, near Keswick, in Cumberland, was found a Gray or Hulsewater trout, of above twelve pounds weight. Dr. Heysham, who informed me of this, added to the observation that he obtained the bird alive, and had kept it above ten years at the time of his communicating to me the account; and that it was either six or seven years before the tail became white."

Now, if this story refers to Ullswater, it is sufficient proof that this nest belonged to the White-tailed Eagle. If, on the other hand, Heysham was speaking of the White-tailed Eagles which had their nest near Keswick, we may well suppose that these birds were accustomed to seek their prey, the great lake trout, at Ullswater, and may thus have been frequently seen fishing by Richardson.

The Rev. W. Richardson, writing in 1793 (Hist. of Cumberland, p. 449), gives only two Eagles as found about Ullswater:—(1). "*Falco chrysaëtos*, Golden Eagle," of which he tells us that a pair had an aery in Martindale in 1778 and 1779. (2). "*Falco Haliaëtus*, Osprey or Fishing Eagle," which was "frequently seen fishing."

Now, I do not think that we need attach much importance to Richardson quoting Berkenhout's name and diagnosis of *Falco haliaëtus*, since he could hardly have been able to compare it with the bird itself—and he would be likely to adopt the name of "Osprey" as current amongst his neighbours, and at that time used for the Sea Eagle. Moreover, it is not probable that Richardson could have overlooked the Sea Eagle, when we know that it was found in the district, and, as I read Heysham, on the very same lake of Ullswater.

Hence I think we may fairly conclude that the aery in Whinfield Park belonged to the White-tailed Eagle, and was probably built on a large tree; that Heysham's two Eagles represent only one species, the White-tailed Eagle; that Richardson's two Eagles are the Golden and the White-tailed; and that the Osprey eagle-tree on the banks of the Eden also belonged to the White-tailed Eagle. And it seems to me that hitherto no satisfactory evidence has been adduced in favour of the Osprey breeding formerly on the English Lakes; nor, I may add, in any part of England, though a nest was once reported to me from Somersetshire (see 'Ibis,' 1865, p. 9).

NOTES ON BIRDS SEEN IN SWITZERLAND.

By O. V. APLIN

(Member of the British Ornithologists' Union).

So little is written upon the birds of Switzerland in 'The Zoologist' that I venture to offer the following slight notes made during a short tour in the Bernese Oberland, in company with Mr. W. Warde Fowler, in June, 1891. Shortly speaking, the ground covered was this:—We arrived at Bern *viâ* Porrentruy (1457 ft.), Delémont (1430 ft.), and Bienne, and I was able to see a few birds from the train while passing through the Jura in the early morning. From Bern we went to Thun (1840 ft.), and up the lake to Interlaken (1860 ft.), then up the lake of Brienz to Meiringen (1968 ft.). On the second day at Meiringen we took up our quarters at the Hôtel Alpbach, which is perched on the precipitous wooded side of the Hasliberg, 900 ft. above the village (*i.e.* about 2900 ft.). From here we visited the woods and pastures, and the pine belt of the Hasliberg in the direction of the

Mägisalp, and also the woods between the Brünig Pass and the Alpbach. Thence we went by the Oben Hasli-thal and the Im-Hof up to the Engstlen Alp (6100 ft.), and over the Jech Pass (7245 ft.), across the Oben Trübore and Gerschni (4100 ft.) Alps to Engelberg (3350 ft.); then down the valley of the Engelberger Aa to Stanz and Stansstad, and across the lake to Lucerne and so back to Bern. As will be seen, we passed over the ground described in 'A Year with the Birds,' by Mr. Fowler. For some days the latter was accompanied by Johann Anderegg, whose name will be familiar to readers of the chapter in that work on the Alps in June, and who has an intimate knowledge of the birds of the district.

Turdus viscivorus, Missel Thrush.—Common in pine woods below the Mägisalp, about 4500 ft. Two or three pairs apparently breeding in the scattered pines at the edge of the Engstlen-Alp.

T. musicus, Song Thrush.—One heard near the Alpbach Hotel (2900 ft.), but it was not until we ascended a little higher, and spruce—with birch and hazel here and there—became the prevailing tree, and the ground was covered with ling and bear-berry, that we saw any Song Thrushes. Here two or three could be heard in song at once. One, sitting on a spruce top, had a very white breast—*i. e.* showed little or none of the buff tint observed in our English birds. I noticed the same peculiarity in a specimen from Skye. In the pine woods (about 4000—5000 ft.) it becomes a common bird, and we observed it in the high woods near the Brünig Pass, but did not meet with it on the Engstlen.

T. merula, Blackbird.—A bird of the gardens in lower grounds. Common at Bern and Thun. One heard above the Alpbach, but with this exception not noticed above 2000 ft. One singing from the top of a stake in a vineyard at Bienne.

T. torquatus, Ring Ouzel.—Not met with until we reached the Engstlen-Alp, where four or five pairs were breeding in the stunted *Pinus cembra* on the alp and in the pines at the edge. As the males had bright but light orange-yellow bills,—much less deep and rich than the Blackbird's,—and a good deal of white on their wings, they should, I suppose, be called *T. torquatus alpestris*. The females were very light and brown. One pair had a nest on a horizontal bough—about three feet from the trunk—of a very old *Pinus cembra*, hoary with shaggy lichen, standing on a rock, as they all do here. The next was about seven feet from the top

of the rock, and fifteen at least from the ground below. The young, which were nearly fledged on the 24th June, had left the nest next day, so I took it down. It was composed of the following materials:—First, a few twigs, then coarse grass, a little moss and hairy lichen; then a thick lining of the rotten peat-like substance found underneath the heather and lichen on the ground. This was in lieu of mud, which was probably not to be had when the birds built,—and indeed could not be obtained close to the house then,—and no cows had come up to the alp even at the date of our visit. Lastly, a thick, warm inner lining of fine dead grass. Another pair apparently had their young hidden under some big rocks; the anxiety of the birds for their young enabled one to watch them closely. We observed a pair a little way below the top of the Joch Pass on the N.E. side.

Saxicola œnanthe, Wheatear.—One on the stony slope at the upper end of the Engstlen.

Pratincola rubetra, Whinchat.—Seen at Münster in the Jura. Fairly common at Interlaken, Meiringen, and extended up to the pastures on the Hasliberg to about 3000 or 3500 feet, but not many. Very common about the hay meadows, &c., in the valley of the Engelberger Aa between Engelberg and Stansstad.

Ruticilla phœnicurus, Redstart.—One male at Bern. Common at Thun about Hotel grounds and on swaths of new-mown hay-grass; young out of the nest on June 18th, much more spotted than those of the Black Redstart. Many at Interlaken. Common about the outskirts of Meiringen, about the cherry, walnut, and pear orchards. Certainly more abundant about there than I ever saw it in England, but Anderegg said it was more common than usual. This fact was interesting in connection with the increase of the Redstart in some parts of England. Watched one to its nest in the gable end of a châlet. Two or three pairs seen outside Stansstad.

R. titys, Black Redstart.—A very common, conspicuous, and well-distributed bird, having a considerable range in altitude. In the towns, the villages, the scattered châteaux, as well as in the mountains beyond human habitations, it is met with. In Bern you hear the song, and trace it to the bird sitting like a black dot on the great white buildings; one frequented the tower of the Cathedral, and another affected that of the Benedictine Monastery at Engelberg. We found it on the Tannenband up to

about 7500 ft. on the rocky slopes, and it seems to breed in rocky places at lower elevations also. As I saw it at Suberg, near Bienne (about 1450 ft.), this gives it a range of 6000 feet. I saw young out of the nest being fed in the wych-elms below the Rathhaus in Bern on the 17th June, and another full-grown one foraging for itself in a kitchen-garden; these were dark grey birds, and were hardly spotted at all, as the young of our bird are. But there they would certainly breed again, as the males were in full song; so, too, at Meiringen, where young had flown by the 19th, and the males were singing; higher up nesting was in full swing, and we watched a pair going in and out of the eaves of a ch[^]let at Golderen on the 22nd. On the Engstlen, the females seemed to be sitting on first nests, as we saw only males and no young birds. So, although the Black Redstart is said to rear two—and sometimes three—broods in the season, this must apply to the valleys only. On the high grounds they probably rear only one, as, I believe, does our bird in England. They certainly sing, and apparently breed, in a plain grey dress, without any white on the wing, both at Meiringen and in the ch[^]lets in high pastures. But I saw old males on the Engstlen Alp and on the Tannenband up to about 7500 ft. The song I usually heard was short, more rapid than that of our bird, and seldom included what, as far as I could make out, were the whole of the notes, *viz.* “chichi weo weo cheo che-dedede.” A bird on the Engstlen sang incessantly a curious song. To his ordinary notes he added, after a slight interval, “tiree-wee,” and sometimes prefixed a grating sound like a grasshopper’s song. This strange sound, which sometimes preceded the song, may perhaps be expressed as “ki-wi-wig,” low and grating, the sound being produced from the back of one’s throat. The bird was rather peculiar, very light (F., who paid great attention to it, said extremely so) on the head and back.

Cyanecula leucoyana, Bluethroat.—A fine male, with conspicuous white spot on the breast, was perched on a pear tree near the water-mill in Golderen (about 3500 ft.), where it was still spring on June 21st, the pear-blossom being not yet over and the hay-grass dotted with early purple orchids. In the Bern Museum there is a specimen of *C. wolfi*, labelled “Bern,” and one of the present form merely marked “Sweitz”; it is possible that the latter is more of a mountain bird than the former; I have a specimen of it labelled as from the Vosges.

Erithacus rubecula, Redbreast.—In song at Thun, at the Alpbach, and, more commonly, in the spruce, hazel, and birch woods above there (about 3000 to 3500 ft.). Also in woods at the top of the Brünig Pass, and between there and Alpbach.

Sylvia cinerea, Whitethroat.—Not common. Seen in flat ground (the Bödéli) east of Interlaken; one near Meiringen, and some in the valley of Engelberger Aa.

S. atricapilla, Blackcap.—Not so common as the next species. In song at Bern, in gardens and Cathedral Terrace. Several at Thun. One near Stansstad.

S. hortensis, Garden Warbler.—Feeding young in box-bush in garden of Hotel Bellevue at Thun. In song at Meiringen near the Reichenbach; above and below the Alpbach; in fact, common in the valley and well up the wooded slopes. On the Pfaffenwand (at about 4500 ft.), at Engelberg, and several about Stansstad. The song is louder and more highly pitched, I fancied, than what we hear in England. Two very fine caged birds hanging outside a stall close to the bear-pit in Bern gave me a good opportunity of listening to the low, rather grating prelude, which can only be heard at close quarters.

Regulus cristatus, Golden-crested Wren.—In big pines in gardens at Thun. In the pine woods above Im-Hof (2054 ft.). In the Bern Museum a male Goldcrest is labelled *ignicapillus*; this is a common mistake, but it is less usual to find a female Firecrest labelled *cristatus*, as one also does there.

Phylloscopus rufus, Chiffchaff.—In song above Alpbach in spruces. In the pine woods at Brünig (about 3200 ft.). In song on wooded cliffs near Stansstad, and in pines at Worb, near Bern (about 2500 ft.).

P. sibilatrix, Wood Wren.—On the N. W. side of the road over the Brünig Pass is a fine old beech forest, the trees having beautifully smooth silvery trunks. Here were several Wood Wrens in song.

P. bonelli, Bonelli's Warbler.—Abundant at Thun on wooded slopes of pine, beech and oak, with undergrowth of hazel. The song is something between that of the Wood Wren and the Lesser Whitethroat, but wants the shiver of the former and the metallic quality of the latter. It is short, of less duration than that of the Willow or Wood Wrens, and is sometimes uttered with an outburst, as it were; but the tone and amount of energy put into

the song varies. The alarm note, "pee-ip, pee-ip," is very soft and low. We found a nest by watching the old birds. It was on the steep sloping ground, at the foot of a hazel-stump, and was formed on the outside of dead leaves of the beech and oak, very much decayed and broken, and fine dead grass, and was lined with finer grass, fibrous roots, and a few black cow-hairs. It contained four young, a few days old at most, the down on which was slate-coloured (no yellow tinge), and inside of mouth bright yellow. In general appearance Bonelli's Warbler is a brownish grey bird, dusky (not white) underneath—a tinge of yellow perhaps on the flanks. They are very restless birds: the cock of the pair to which the nest belonged sang with food in his mouth. I have known the Willow Wren do this. This was the common *Phylloscopus* in the localities we visited, but it does not, I believe, go so high as the Chiffchaff. Bonelli's Warbler was observed on the wooded slope on the Reichenbach side of Meiringen; on the slopes on the opposite side, in deciduous trees, to about 3300 ft., in the woods between Brünig and Alpbach; *not* in the woods down the slopes from Engelberg to the level valley, but this was early in the afternoon, and all birds seemed very silent; in orchards near the woods at the side of the valley at Stansstad. I did not see or hear a Willow Wren in Switzerland, but they were almost silent when we left England. Mr. Fowler has observed it at Meiringen.

Acrocephalus steperus, Reed Warbler.—One in the hotel garden at Stansstad came and sang its characteristic "churra churra churra" as we sat under the cropped chestnuts. It was perhaps breeding somewhere among the lilacs and other shrubs. We had in the morning been observing and listening to the song of the Marsh Warbler: the many points of difference between the two birds is very striking.

A. palustris, Marsh Warbler.—The Marsh Warbler seems to be the common "river warbler" here. Between the lakes of Thun and Brienz lies a fine stretch of ground (the Bödéli), rather marshy in places, in others drained by ditches. In June it was covered by short hay-grass, gay with beautiful flowers, sainfoin, yellow rattle, bird's-foot trefoil, viper's-bugloss, the deep violet spikes of a plant of the dead-nettle tribe, so common in Swiss hay-pastures, and fine spikes of *Orchis incarnata*, varying from deep purple to rose-pink. Here and there patches of reeds, meadow-sweet, and low alders; narrow, wet ditches grown up

with reeds; and patches of bramble and a thorny, scrubby shrub with narrow, hoary leaves. From a broad, shallow, dry ditch, with some growth of bushes, reeds, and meadow-sweet, I flushed a Marsh Warbler which flitted away with a low grating cry. The nest was built in, and entirely supported by, the stems of the meadow-sweet, about two feet from the ground. It was composed entirely of rather fine dead grass-stems with a lining of finer grasses, and a few long hairs, and contained five fresh eggs. Very remarkable eggs, quite distinct from those of the Reed Warbler; ground-colour white, marbled with grey, lilac-grey, and light greenish brown. We afterwards found another pair, accompanied by their young brood on the wing; these haunted a clump of bushes, and gave us close views of them. On the 19th June F. observed a bird, in good song, about a narrow belt of thick alders between the Aare and some gardens at Meiringen. On the 22nd we visited the spot again, and saw the bird, which had probably hatched its young, as it sang very little. Several times it crossed the broad river to visit some allotment gardens on the other side, and perched once or twice on the top of tall French bean-sticks. It imitated the Sedge Warbler's chatter (a little) and notes of Black Redstart and Tree Pipit. At the east end of the Alpnach arm of the Lake of Lucerne, between Stansstad and Stanz, is a broad tract of flat ground. Near the lake it is simply a drained bog; at the time of our visit only wet in places, but still much overgrown with reeds, and the straight roads through it quaked as a cart rumbled along. Here we found the Marsh Warbler pretty common, and had several good views of the birds, besides listening to the song of three individuals, on the blazing hot morning we spent there. The nest of one pair we watched in a stretch of tall reeds and meadow-sweet (the ground dry underfoot) was built in the stalks of the latter plant, and formed of dead grass-stems, with a lining of finer grasses and a few hairs. It contained only two eggs, rather longer than those in the Interlaken nest, with a white ground, marked only at the big end, and that not very much. Unfortunately, as I was handling one of the eggs, one of the horse-flies, which were very troublesome, bit me, and I broke it. It seems likely that two broods are reared in the season, as this nest was found on the 28th June. The two nests examined were not so deep as that of the Reed Warbler; the sides were fairly thick, but the nest was

very compact, and less neat than that of the last-named species. The Marsh Warbler is not a particularly shy bird. It often takes up a position on an exposed twig, &c., in the attitude of an ordinary perching bird, and does not confine itself to clinging to a reed or other stem, though the males will sing in the latter position. It shows itself more, and does not skulk nearly so much as the Reed Warbler. The birds seem to be even playful sometimes, and we saw two toying together in the air and about the tops of the reeds. The song is quite different to the Reed Warbler's, and is not delivered in the leisurely fashion of that bird. But it is the finest reed-bird song I have heard, very rich and varied. The bird's natural notes seem to consist of some chattering ones like those of the Sedge Warbler, mingled with others resembling the high pipe of the Nightingale, but lower, and the liquid, juggling notes, but less full, of the same bird. This is the only thing I can compare the notes with, but they are delivered in a different way. The birds at Stansstad also imitated parts of the song of the Swallow, Tree Pipit, and Goldfinch, and especially the call-note of the last named. In appearance the Marsh Warbler is decidedly paler than the Reed Warbler, the head, neck, and rump cold in tint, and in the case of the first two, with almost a grey shade on the brown. A remarkable character is the warm, pale rufous of the wings, which makes them contrast conspicuously with the other parts. I noticed it particularly in all the birds I saw at close quarters. The explanation of it is probably to be found partly in Mr. Howard Saunders' remark that when the plumage is not much abraded the wing-feathers are tipped and margined with pale buff. A specimen in Bern Museum, labelled "Mooseldorf-see," is a very pale bird, with quite a grey tinge on the head.

Accentor modularis, Hedgesparrow.—First seen as it sang on the top of a pine below me in the higher pine woods near the Magis-alp (about 4500 ft.); one observed, in song, on edge of Engstlen-alp (6000 ft.); and another just below the hotel on the Trubsee (about 5800 ft.). Quite a mountain bird in Switzerland. As showing its tendency to this character, even with us, I may mention that I have seen it on bare rocky ground on a Welsh mountain, at between 1200 and 1500 ft. elevation.

A. collaris, Alpine Accentor.—One seen and heard singing as it flitted about the cliff edge or perched its dumpy form on a

projecting fang-like rock, between the Engstlen and Joch Pass. Another there, two days afterwards, and the same morning, when coming down the N.E. side of the pass, we fell in with two pairs. It has been well called the "Alpenlerch," having a habit of soaring up a little way like a true Lark and singing on the wing. It has a curious flickering, dancing, wavering flight. A short, heavy-looking bird, it seems to squat quite down when sitting on a stone. The song, which is delivered by the bird when perched on a rock, as well as when in the air, has sometimes a resemblance to that of the Hedgesparrow; again one hears notes reminding one of a Whitethroat's song when it sings on the wing. There are also notes like "wich che che-ow che-ow," and some which may be syllabled "tay tay tay."

Cinclus aquaticus, Dipper.—A pair were feeding young which could fly, on the banks of the Aare at Meiringen, on the 19th June. I heard one in song there on the 22nd. On both the occasions that I walked through the Aaresbucht I observed Dippers there, even quite in the middle, and I marked one to its nest in a hole in the rock, some five feet above the surface of the roaring torrent. It was pretty to see the old Dippers on the banks of the Aare hawking flies in the air; also quite marvellous to see how they dashed into the river (here flowing with the greatest rapidity and raising white-crested wavelets on its cobalt surface as it rushed along), and allowed themselves to be carried down some yards before rising again. It seemed almost inevitable that they must be swamped. All the adult Dippers I saw at Meiringen, so far as I could see (and I had excellent opportunities of seeing as the birds flew towards me, mounted into the air after a fly, or perched on a stone), entirely wanted the chestnut band on the breast—a fact I was not prepared for; head and neck conspicuously pale, but they looked very dark underneath. Two specimens in a shop-window at Interlaken had the usual chestnut band, and so also had three in the Bern Museum, but in two of the latter it was not at all bright. I saw one in the Engstlen just below the lake where the little river flows rapidly down a pine-clad rocky ravine; this bird was rather pale-coloured, with pale head and neck, and *had* chestnut on the breast, which convinced me that those at Meiringen had not. I noticed a young bird of the year as we walked up the Genthal.

Parus major, Great Titmouse.—Observed at Bern; at Thun,

several; and at Stansstad, where it still had its spring note on the 28th June.

P. ater, Continental Coal Titmouse.—At Interlaken an old bird with a very blue-grey back was feeding young branchers at the east end of the town. I found a nest on the Engstlen Alp in a crevice in the face of a perpendicular rock shaded by a couple of pines at the top of a steep grass slope. By standing on tiptoe I could just get my finger into the crack, and drawing myself up by my hands, could look in. The young birds were partly fledged, and chirped merrily. I was unable to get hold of the one addled egg which lay in front of them. It looked exactly like an average English Coal Tit's egg. The old birds were so excited that I could watch them within a yard of my head. This form is a very clean looking bird, and the blue-grey of the back is conspicuous. This form is in the Bern Museum, labelled "Bern."

P. palustris, Marsh Titmouse.—A bird at Interlaken was very "clean-cut" and neat-looking, and was perhaps the form described as *P. palustris*, for though I think I have seen it stated that Prof. Fatio says this form does not come into the valleys, there is a specimen in the Bern Museum labelled "Lucerne." Several in the pines just below the Mägis-alp (about 4500 to 5000 ft.) were certainly *P. borealis*, grey-looking with large black cap. This form was also observed in the woods near the Brünig Pass.

P. cæruleus, Blue Titmouse.—Observed at Bern and at Thun, where it was feeding young branchers.

Acredula caudata, Long-tailed Titmouse.—We did not see any, and I only mention it in order to call attention to the fact that both this form and *A. rosea* are in the Bern Museum labelled "Bern."

Parus cristatus, Crested Titmouse.—Several in pine woods below the Mägis-alp. It has a very grey appearance, and looks, I think, lighter coloured than the Blue Tit. The erected crest was conspicuous in one which sat on a pine top, calling and excited. It would be more heard than seen in the thick pine woods, with boles hoary with long, shaggy lichen. The note is "seet, seet, seet"; but it has also a sibilant, twittering note. I heard the note in the Brünig woods also.

Sitta cæsia, Nuthatch.—Seen at Thun; in the Brünig woods twice, and in the pear orchards in the valley near Stanz. There is a pretty variety in the Bern Museum, all white except the secondaries and coverts, which are grey.

Troglodytes parvulus, Wren.—The Wren is a bird of rocky

high woods apparently. It was in song in the Brünig woods at the top of the pass. I saw one creeping about the rocks in the woods near Holefluh, and another in the bushes at the top of Pfaffenwand, just by the Trübsee Hotel.

Motacilla alba, White Wagtail.—Observed from the train by the Birs at Münster, in the Jura; at Bienne; about the house-roofs in Bern; at Thun; the house-roofs in Interlaken and Meiringen; young and old by the Aare in Meiringen, at Engelberg (3400 ft.), but not higher, and many in the valley between Wolfenschiessen and Stansstad, and at the latter place. Some observations on the plumage and habits of this species will be found in 'The Naturalist' for 1891.

M. melanope, Grey Wagtail.—I saw one in the Suze, near Sonceboz (2150 ft.), in the Jura, and two others near Reuchenethe, from the train. At Meiringen I observed the adults on the banks of the Aare, and in the Gorge of the Aare, also young on the wing on the 22nd June. One observed in the Genthal, but the pair which F. generally found breeding at the mouth of the Enstlen See were absent; perhaps the long hard winter and late spring may account for this. There was a pair by the ornamental lake in the garden of the Hôtel Titlis at Engelberg, and I saw a bird of this species by the water below the Lion at Lucerne.

Anthus trivialis, Tree Pipit.—Observed at Interlaken; about the Alpbach Hotel, Meiringen, and all up the lower pastures of the Hasleberg, where there were trees up to close to the pines (about 4500 ft.). Singing at edge of pines at the foot of the Pfaffenwand on the Gerschin Alp (about 4000 ft.). Fairly common on the wooded edge of the valley about Stanz.

A. campestris, Tawny Pipit.—When walking along the straight hedgeless roads which intersect the open tract of drained land between Stansstad and Stanz on a blazing hot morning, 28th June, my attention was drawn to a Pipit which was new to me. Its song had some of the notes of, but was inferior to, the Tree Pipit's. It rose from the ground and sang as it returned to it. The ground there consists of hay-meadows, in which the grass was short (perhaps a second crop), and is much drier than that lying nearer the Alpnach branch of the lake. I could not get near this bird from the nature of the intervening ground, but afterwards met with another pair, whose anxiety for a nest of young they evidently had near at hand brought them close to me. They were of this species. The Tawny Pipit is a good-sized

bird, but its tail looks proportionately short; the plain sandy brown of the upper parts is very distinctive. In the male the throat and upper breast is very slightly marked with dark specks, and rather more so in the female; but from specimens I have examined I find that individuals differ considerably in this respect. The young are always more marked both below and on the wings—*e.g.* two Swiss examples in the Bern Museum. They often perched on the single telegraph-wire. Alarm-note, “chit, chit”; song, short, but with a few rather good notes.

A. spipoletta, Alpine Pipit. — A good many pairs on the Engstlen Alp, but according to F. and Anderegg, not so many as usual, a fact which the latter attributed to the severity of the late winter in the valleys; but I do not know whether this species winters in Switzerland at all. It extends on the Tannen-band to about 8000 ft. at least; the lowest elevation at which we saw it was 4000 ft. on the Gerchin Alp, where several pairs were evidently breeding among the tall growth of globe-flowers and large gentians. The song reminds one of the Rock Pipit's, to which I had been listening at Dover,—“zig zig zig zi zi zi zi,” running down and becoming quicker at the end. Sometimes it has a ring in it, when the notes approach “tink tink tink ti ti ti ti.” A short strain was delivered by the bird when sitting on a *Picus cembra* or a big rock, but the full song only in the air. Mr. Scott Wilson (‘Ibis,’ 1887) speaks of it as “alighting invariably on the extreme top of any tree near,” but I often saw it descend on to a big rock. A bird anxious for its nest will sit as long as you like on a stone or a cedar, and with its monotonous “sic, sic, sic” of alarm. On the Engstlen Alp (in the latter half of June) the the young were probably hatched, from the actions of the birds. Mr. Scott Wilson mentions finding a nest of five eggs on the 10th June the year he was there, and young just hatched on the Furka on the 17th. Some pairs seemed to be nesting among the alpen-roses (just coming into bloom), and the heather in that part of the Engstlen which is studded with large boulder rocks and a few ancient “cedars”; others inhabited rather bare ground, on the grassy and rocky slopes. The adult male is a beautiful bird, very light coloured, with pale grey head, rosy breast, and conspicuous white eye-stripe; the female rather browner. It is a constant singer; we heard the song, near and distant, in brilliant sunshine, wreathing mist, and even heavy mountain rain.

(To be continued.)

ON THE HERPETOLOGY OF THE GRAND DUCHY
OF BADEN.

BY G. NORMAN DOUGLASS.

(Continued from Zool. 1891, page 391.)

II. Fam. BUFONINA.

1. *Bufo calamita*, Laur.—Considerably more numerous in the neighbourhood of Karlsruhe than the following species, though less commonly met with during the daytime. The proportion must be about ten *calamitæ* to every four *vulgaris*, and one may frequently count up to twenty of the former before seeing a single Common Toad. The dry soil of the “Hardwald” seems more congenial to it; and the great abundance there helps, possibly, to explain the absence of *B. variabilis*, as it appears that these two tend to exclude each other, and rarely to occur in equal numbers.

The specimens from this district are of larger dimensions than English ones. The colouring is often fairly bright, in consequence of the red tint of the warts on the back (chiefly with the female sex); the fundamental tone varies between dark brown and light greyish-green. Some individuals of the latter form might easily be mistaken in the twilight for *variabilis*, especially as the dorsal groove is here not so clearly defined.

The possession of these spinal lines, or stripes, is a common trait with vertebrate animals—*cf.* many of the Mammalia; the vertebral zones and crests in lizards, newts, and in the embryonic stage of fishes, of which latter a rudiment is retained throughout life by the *Salmonidæ*; and, being traceable to the earliest condition of all vertebrates, possesses a deeper morphological significance than the other markings.

The Natterjack is found, I believe, in every other part of the Grand Duchy, as well as in all the neighbouring countries. Its range does not extend so far south or east as that of *B. variabilis*. In the Palatinate it is reported as “not very common:” I captured a single specimen, in broad daylight, near Wörth on the Rhine.

2. *B. vulgaris*, Laur.—This is, together with *Rana fusca*, the most widely diffused batrachian of Baden, being found in every altitude and situation.

In point of size, it seldom exceeds medium dimensions, and never attains the vast proportions of some Swiss or Austrian, to say nothing of Italian, specimens. As with other species protected by obscure colours, there are here no marked varieties. Some

individuals may be found indistinctly striped (not so frequently as in England or Scotland); in others the excrescences on the back are of an unusually dark brown tint.

Towards the middle of April there are generally one or two pairs in the fountain of the Schlossgarten, and other ponds near Karlsruhe; while large numbers congregate in more suitable localities, such as that mentioned in the account of *R. arvalis*. In the Black Forest I have seen them in pools of melting snow, and it reflects credit on their constitution that they can survive a prolonged immersion into water of the temperature of ice. But most recently it has been shown that though frozen into solid blocks, their ultimate recovery is ensured, if a slow and judicious process of thawing be adopted.

There is some fluctuation in the numbers of this species: in some years it is comparatively rare, in others exceptionally common. The latter was the case in 1887. A similar periodical abundance has been recorded with other anurous batrachians, and may be attributed in chief part to moist weather favouring the development of the spawn at the critical moment. For whereas one or two species display considerable forethought in selecting deep water to deposit the spawn, others are most improvident in this respect,* and content themselves with the first piece of water that comes in their way. Hence large quantities of spawn must perish annually, if a sudden drought sets in.

Occasionally, in dry weather, batrachians will undertake journeys across country in search of water. I have noticed this principally with *Bombinator bombinus*, which, through establishing itself in the most shallow and ephemeral puddles, is often obliged to change residence. An emigration of *Rana esculenta*, on a more wholesale scale, has lately been recorded, and, according to an American journal, there can be witnessed, in Dakota, an annual procession of frogs marching from the Red River (winter quarters) to the prairies in summer, and back again in autumn.

* It is not surprising to find this same lack of intuitive instinct with birds. As an instance which has come under my own observation:—During a spell of unusually fine weather, a number of Reed Warblers on the River Alb, near Karlsruhe, were tempted to build their nests long before the reeds were of sufficient height. The consequence was that they were all destroyed by a sudden flood, with one exception, where the bird heroically hatched its brood, though the nest was covered with thick mud. In this and most cases the catastrophe was unexpected; in others it appears as if repeated sad experience will not effect the discontinuance of a habit formerly justify^d

The quantities of small frogs and toads sometimes seen covering a large extent of ground has given rise to the notion that they have been rained down from the clouds, whereas, in all probability, the explanation given long ago by Roesel is the correct one, *viz.*, that a sudden rainfall has caused them to quit the fissures of the ground, where, before, they had been sheltering from the dryness. In an old work of the seventeenth century, by one Gasparus Schott, a Jesuit professor, the author gives his views on the subject:—"Ranas ex putre pulvere* & imbre nasci notum est omnibus, ut ipsemet non semel vidi"; and, later on, "Cum ipsâ subinde pluviâ decidunt, in nubibus generatæ. Testes habeo oculos, imò et oculos meos!" But he does not always trust to his own powers of observation. Thus, after discussing at great length the vexed question whether the Salamander can exist in fire, and weighing the probabilities on either side, he comes to the conclusion:—"Salamandra aliquamdiu in igne vivit,—at deinde moritur."

It has been observed that the young of this and other nocturnal batrachians display much more agility, in various ways, than the adults. When it is found that, in addition to this, they lead a diurnal—*i. e.* more natural—life, we are led to consider whether the ancestors of the race have not been forced, in the course of time, to assume their present concealed habits, presumably for the sake of protection. The colour affords further confirmation of this hypothesis: there has been a simultaneous acquisition of nocturnal tints in place of the original brighter ones now confined to the immature condition. Their present sedentary mode of existence has therefore resulted in a partial muscular atrophy, similarly as unwonted exercise will induce hypertrophy of parts.

In this and many other instances a more systematic study of the ontogenetic development would doubtless yield much evidence of the gradual differentiation, through increased use or disuse, of allied races. This is certainly one of the most fertile provinces of Natural History, and, being comparatively unexplored, offers special attractions to the biological speculator. It is seen that the young of many species possess a greater variety of capacities,

* This is akin to the idea expressed by some peasants in the Auvergne, who, misled perhaps by external resemblances, imagine that the Viper is formed spontaneously out of the dung of horses and cattle.

a more diversified adaptability, than the adults. At the same time the young of forms highly specialized often do not exhibit, to any pronounced degree, the distinguishing features of their parents.

Clearly, under changing external conditions, some amount of flexibility during growth is as essential to the species as it is to the individual. This flexibility differs both as to degree and direction (quality), and is manifested in what may be called their respective characteristic tendencies. Having attained maturity, the race, like the individual, has become more specialised in its mental and physical constitution. But the acquired comparative rigidity, while affording protection against temporary shocks which might have proved fatal during growth, constitutes in itself the primary cause of incipient decay.

3. *B. variabilis*, Pall. — Much remains to be done before the distribution of this species in the Grand Duchy is anything like accurately determined. Judging by the accounts from the countries surrounding Baden, whose Herpetology has been more thoroughly investigated, we should expect it to be pretty universally distributed here, as it occurs, more or less abundantly, in all of them.

I have been unable to find it in the vicinity of Karlsruhe, and should be careful in crediting statements of its existence not capable of ocular demonstration, as there is much confusion between this and the two foregoing species. It is said to occur as near the capital as Ettlingen (five miles south), and again at Heidelberg; Leydig cites it from Weinheim in the north.

In the Palatinate *variabilis* appears to be very common near, and in, the towns of the Rhine Valley. It has been recorded from every part of Germany, though it seems to be absent, or very rare, in certain districts.

I was surprised to come across this species in the island of Lipari, during a short stay there in the early spring of this year. The tadpoles were abundant in the three rivulets of warm mineral water which run down to the sea on the western part of the island (Prof. Giglioli has kindly written to say that he also found it there in 1878). How it reached this volcanic island, destitute of fresh springs, and has succeeded in establishing itself there, is at present a mystery.

At the time of my visit all animal life was very poorly represented, owing to the stormy weather; still I venture to append

what I was able to observe in the way of Herpetology.* The lack of accommodation in these islands is the chief drawback to tourists; and I will take this opportunity of again thanking Mr. Narlian, of Lipari, for his kind hospitality during my stay there.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

The Marten in Norfolk and Suffolk.—Referring to Mr. Harting's criticism of the opinion I ventured to express (Trans. Norf. and Nor. Nat. iii., p. 668), that the recent examples of this species obtained in Norfolk must be regarded as "escapes," and to my suggestion that it was possible—as in the case of the Irish Martens which had escaped from confinement in the South of England—for these accidental liberations to happen without the fact being suspected, I fear that I have been misunderstood, as it certainly was not my intention to imply that the isolated occurrences here met with were individuals which had escaped *in the South of England*. I merely mentioned that circumstance to show such a thing had occurred, and that a parallel case might happen here quite unsuspected. That the Kelling and Hevingham Martens were not native Norfolk animals I think Mr. Harting's remarks go far to render probable, for I quite agree with him, to use his own words, that "there are so many keen naturalists and observant sportsmen in Norfolk that it would be very difficult for any escaped Martens to be at liberty without the fact becoming speedily known," and that is precisely what I believe happened in the cases referred to; how much more

* Of snakes, only *Zamenis viridiflavus* was observed on Stromboli and the islet of Basiluzzo (the young already decidedly *carbonarius*), but it undoubtedly also occurs on the larger islands of Lipari, Vulcano, Salina, and Panaria. Light-coloured ones—*Tropidonotus*?—are reported to exist on Lipari.

[The colour-perception of the islanders is not highly developed. Anything light is *bianco*, dark *nero*.]

L. muralis tiliguerta, dark on Stromboli and Vulcano, light on Lisca Bianca; varying according to the soil on Lipari, where a fine *rubriventris* race may be met with near Bagno Secco. I could not detect it on Lisca Nera, which, I was afterwards told, is swept over by heavy seas; but the hazardous climb up this rock was rewarded by the discovery of a nest of *Larus cachinnans*, Pall., on the summit. The most brightly coloured and largest *muralis* are to be seen on Panaria. Curious to say, this lizard is less shy in the neighbourhood of villages than on the larger islands off the beaten track, and quite unapproachable on the small islets.

Panaria seems also to be the Eldorado of geckos (*Platydictylus*), where in summer their numbers are said to be quite appalling. They are known as "Salamide," and are reputed highly poisonous. This species occurs on all the larger islands, while *Hemidactylus verruculatus* exists on Basiluzzo, Dattilo, and, presumably, all the other islets.

unlikely would it be that the creatures were survivors of the old Norfolk race. The only way of accounting for their presence, therefore, is to regard them as "escapes," and very recent ones, too, I believe. With regard to the late Mr. Gurney's communication printed in vol. ii., pp. 273-4, of the 'Transactions of the Norf. and Nor. Nat. Soc.,' he distinctly says the source of his information was "a cutting from a newspaper of the year 1811," then in his possession; he therefore quotes from a contemporaneous local record, and if coincidence of date has any weight the preference should be given to this statement rather than to that in Daniel's 'Rural Sports,' published two years later. I certainly was aware of Daniel's reference to the same occurrence, and doubtless Mr. Gurney was also, but he evidently wished to reproduce a local version. This is not the only discrepancy between the two accounts, for the latter gives the number of Stoats killed as 416, whereas the former mentions 446. Sir Ralph Gallwey quotes this same list in his book on 'Field and Covert' shooting (Badminton Library), p. 18, and differs from Daniel's numbers in three instances, and from Mr. Gurney's in two; but with regard to the number of Martens no two are alike, Mr. Gurney giving the number as 43, Daniel 3, and Sir Ralph Gallwey 9. They cannot all be right, who shall decide between them? I would suggest that the smaller the number the more likely it is to be correct. The Kelling Marten is now in the possession of Capt. Bird's son, the Rev. Maurice C. H. Bird, of Brunstead Rectory.—T. SOUTHWELL (Norwich).

Albino Squirrel.—A beautiful albino Squirrel, which had for some weeks past been seen in our garden and the adjoining plantations, was, on the afternoon of Nov. 23rd, caught by a retriever, and brought to my brother, Mr. Bertie Matthews. It was a female, of a pure white, without any mark of the usual colour; its eyes were entirely of a transparent rosy pink.—A. MATTHEWS (Gumley, Market Harborough).

The Polecat in North Wiltshire.—I do not think that the Polecat, *Mustela putorius*, is by any means extinct in North Wilts. Two instances of its occurrence have come under my observation. About fifteen or twenty years ago a boy killed one in the parish of Hardenhuish, near Chippenham, where the stuffed skin is still preserved in a cottage. During the severe winter of 1890-91 another specimen was secured in the same neighbourhood. The animal, evidently half starved, had crept into a fowl-house in the outskirts of Chippenham, where it was discovered and killed.—A. G. HEADLEY (Portchester).

The Polecat in Northamptonshire.—On September 26th ult. I received a letter from Mr. Percy Mitchell, of Cranford Hall, Kettering, in which he informed me that a Polecat had been caught in a trap at that place, by his gamekeeper, a few days before the above date.—LILFORD (Lilford Hall, Oundle).

CETACEA.

Bottle-nosed Dolphin on the Lincolnshire Coast.—A small specimen of *Delphinus tursio* was washed ashore on the Lincolnshire coast, at Marsh Chapel on the 5th November last. It was evidently a young animal, barely measuring seven feet in length, but was too much decomposed to note the colours. I do not think that the Bottle-nosed Dolphin is by any means a rare species in the Humber, and I am quite convinced that I have seen it on several occasions. In August, 1888, two of these animals came up Tetney Haven, and allowed themselves to be enclosed in the lock, where they were both shot. One measured 11 ft. in length, the other 8½ ft. This occurrence was recorded in 'The Naturalist' at the time by Mr. Cordeaux. About the same time H. Stubbs, the well-known wildfowler, told me that three other individuals of the same species were stranded near Tetney Haven. These unfortunately were cut up or removed before I heard of them; but I have no doubt of their correct identification. I possess the skulls of those killed at Tetney, and the entire skeleton of the Marsh Chapel specimen is being preserved for me by Jeffreys, of Great Grimsby.—C. H. CATON HAIGH (Grainsby Hall, Grimsby).

BIRDS.

Feeding Wild Sea-Gulls, Jackdaws, and Pigeons.—A correspondent of the 'Western Morning News,' writing from Gurnard's Head, Cornwall, Aug. 27, 1891, under the initials J. W. B., says, "A tame Gull will come for its dinner to a rock a few yards from the house when whistled for. On the same rock during the winter time Jackdaws were in the habit of coming on the same signal being given. When the Gulls began nesting I surmise the Gull was attracted by the evident enjoyment of the Jackdaws, and one was not long in making an attempt on the citadel, at first very cautiously, but now has lost all fear, and not only comes daily, but brings her three young ones with her. Should the signal be delayed, they will come on the rock and cry out, the young ones especially. On my taking them some scraps (they will eat anything, and with an avidity only equalled by the Pelican) they circle round, and on my standing a few yards away will alight and begin their repast. On wet days they will circle round the balcony of the house and utter cries to attract notice. Before the Jackdaws left for the harvest, as they invariably do, I one day placed some food on the rock; the Gull took possession, and was immediately surrounded by half-a-dozen Jackdaws, none of whom dared venture on the rock, but sat at its base whilst the Gull devoured her dinner in the most leisurely way. The fisherman in the cove has also a tame Gull which, on his return from sea, will alight on the water and wait patiently for any fish thrown to it. It was attacked in the most savage manner the other day by another Gull, which did its best to try to drown it. As far as regards forecasting weather, the

Sea-Gull is more reliable than any glass. I may also state that there are about fourteen Wild Pigeons living in the crevices of the rocks opposite. They come daily, at daybreak, and sit on the roof till fed, when they vanish until next day. When the 'corn is cut I do not see them so often, but they turn up as soon as harvest is over. There are also a pair of Ravens which have a nest annually on the cliff at a loftier range than where the Pigeons reside, and will come to an old mine shaft and appear grateful for any scraps. The solitariness of the place, it is believed, is the cause of their docility."

Rough-legged Buzzard in West Sussex.—On Oct. 29th a Rough-legged Buzzard, *Buteo lagopus*, was shot near West Harting Pond. It proved to be a female, measuring 23 inches, with extent of wing 54 inches, and weighed 2 lbs. 5 oz. It was forwarded to Messrs. Pratt, of Brighton, for preservation.—H. D. GORDON (Harting Vicarage, Petersfield).

[Observers in other parts of the country have remarked an unusual number of Rough-legged Buzzards in October and November. Half-a-dozen were killed in various places in Suffolk; the last heard of was trapped on Mr. Deek's farm at Westleton, on Nov. 28th. In Lincolnshire one was killed at Sutton on Nov. 19th; this bird was reported to have measured 4 ft. 7 in. across the wings.—ED.]

Sabine's Gull near Bournemouth.—An adult specimen, in winter plumage, of Sabine's Gull, *Xema Sabinii*, has recently come into my possession. It was found dead in a field near Bournemouth, on Oct. 13th, 1891, during the prevalence of S.W. gales. As recently killed mature examples of this Gull are rarely met with, perhaps the following observations will be useful:—Tibia, tarsus and toes, also webs, pale drab colour, with a shade of umber at the joints and on the webs. Nails dark umber. Bill from base to a little beyond nostrils black, remainder straw-yellow. Gape, and inside mouth and throat, bright reddish-orange. Tongue pale orange-yellow. Eyelids black. Irides dark hazel. The measurements of the body and wings agree with published descriptions, and need not be repeated. The plumage on the whole of the under parts was beautifully suffused with salmon-pink, which was observable for several days after the bird had been skinned and mounted. The white tips to the black primaries have a twisted and worn appearance. The tail is not so acutely forked as shown in Yarrell's figure, while the sharp angle to the lower mandible was not at all observable in the fresh bird, but is beginning to appear as the bill dries.—F. COBURN (7, Holloway Head, Birmingham).

Sabine's Gull in Cornwall.—A specimen of Sabine's Gull was shot by Mr. C. Vingoe, at Newlyn (West), about the middle of October last.—T. H. CORNISH (Penzance).

Ornithological Notes from Worcestershire.—On the evening of July 4th, 1891, I saw two Curlews, *Numenius arquata*, fly over my garden at King's Heath. They were making direct for Cafton or Bromsgrove. I have upon two previous occasions seen Curlews in this district during the summer time. The keeper of Cafton Reservoir, near Bromsgrove, tells me that Curlews are of fairly frequent occurrence there during the summer months, and his observations have been supplemented by information I have received from a gentleman living near the Reservoir. Does not this suggest the possibility of the bird nesting in this district? The high heath-land on Lord Windsor's estate would be a suitable spot. The Wheatear, *Saxicola oenanthe*, is a decidedly rare bird in this district, and its occurrence is well worth recording. On August 16th, 1891, I saw two young specimens in a meadow at King's Heath, near my own house. In September, 1890, I saw one adult at exactly the same spot. I have once received this bird from Bromsgrove (fifteen years back), and once also from Quinton (about four years ago). An adult female Ring Ouzel, *Turdus torquatus*, was shot at Quinton on the 28th October, 1891. On April 17th, 1891, I secured a fine adult male, with the head largely speckled with white, shot at Northfield; both in Worcestershire. A female Merlin, *Falco aesalon*, nearly adult, was caught in a net at Black Heath, Worcestershire, on Nov. 4th, 1891. This bird is now a rare visitor to us.—F. COBURN (7, Holloway Head, Birmingham).

Ground-building Birds removing Egg-shells. — Referring to the remarks on this subject by Mr. F. M. Ogilvie (Zool. 1891, p. 445), the Whaup, or Curlew, *Numenius arquata*, makes an open nest, and does not remove the egg-shells immediately the young are hatched. On the evening of May 19th, 1891, I found a nest of this bird. I took one of the four eggs, which was quite fresh, and continued to watch the nest. On June 18th, the thirtieth day after finding it, I noticed one egg chipped in the morning. I re-visited the nest in the middle of the day, and heard the young chick squeaking inside the shell. On my third visit, at night, the down-covered youngster was sitting—though barely able to do so—in the nest beside the other two eggs and the empty shell. This latter I took up, and observed that it was not broken in two parts (like a Partridge's egg, for example), but that the bird had come out at the larger end. The young bird made a faint squeaking while I was looking at it. On the following morning I found the young bird two or three yards from the nest. I replaced it, but it ran out again. In the afternoon I again saw it further off than before. The old bird sat two days longer on the other eggs (which were both rotten) before leaving them. On Sept. 5th, after the Whaups had all left the moors, I came on one of their nests, for which I had looked in vain in the summer, with the bits of egg-shells lying in and near it.—ROBERT GODFREY (46, Cumberland Street, Edinburgh).

The Stone Curlew in Kent.—A few years ago the Stone Curlew, or Thick-knee, *Edicnemus crepitans*, was comparatively common on the great shingle wastes in Kent. Now, by reason of railway extension and the consequent opening out of formerly lonely districts, it is virtually extinct. An odd pair or so still lay their eggs on the shingle; but during the last five years I have not known a single pair to elude the grasp of the 'long-shoreman or loafer. This bird is locally known as the "Nighthawk," from its well-known nocturnal habits. The Thick-knee usually lays its eggs on the fine shingle close to the edge of some dead patch of gorse or broom, but rarely or never on the earth or grass adjacent. The fishermen and others declare that these birds have a habit of rolling one egg away when they leave their nest, so that, in the event of one egg being discovered, the other may possibly escape. I have never seen this operation performed, but have found the eggs some distance apart. It is a matter of great regret that these interesting birds should be thus hurried out of existence in Kent.—WILLOUGHBY VERNER (Capt. Rifle Brigade).

The Kentish Plover.—This bird, like the Stone Curlew, or Thick-knee, is being rapidly exterminated in the county from which it derives its name, by collectors and so-called "naturalists," who, with walking-stick guns, in and out of season, destroy all they can approach. These gentry do more harm even than they imagine, for I have come across many small plovers and other birds which have been ineffectually "peppered," and have gone away to die. Still oftener I have found nests of the Ringed and Kentish Plovers which have been trampled on by these uncouth marauders in their clumsy and ever eager attempts to "annex" everything they can in the least possible time.—WILLOUGHBY VERNER.

[Why is not the "Wild Birds Protection Act" put in force? Protectionists were very clamorous to get this Act passed, and now that the Legislature has acceded to their demands they take no steps to see it enforced.—ED.]

Late appearance of Hirundinidæ in North Norfolk.—The Swallows, Martins, and Sand Martins that pass the summer in this neighbourhood seemed to leave about their regular dates, but there was an unusual re-appearance of all three species during the month of November, 1891. Mr. Alexander Napier, of Holkham, gives me the following records observed by himself;—Nov. 10th, two Swallows, near Wells. Nov. 11th, two Swallows, Holkham village. Nov. 17th, a single Swallow, Holkham village; and on Nov. 19th, several Martins in the same place. Mr. Henry Lee Warner observed both Martins and Sand Martins about the sheltered grounds of Walsingham Abbey on Nov. 13th, about twenty of each species; the Sand Martins remained till Nov. 18th, and the Martins till Nov. 20th. On Nov. 14th I observed some twenty Martins circling over the village of

Little Walsingham; the day was bright and warm. Miss Hamond informs me that she saw a Swallow at Twyford Hall on the 17th November.—H. W. FEILDEN (Wells, Norfolk).

Albinos and White Varieties.—The following extract may satisfy Mr. J. Jenner Weir with reference to the albino Twite (Zool. 1891, p. 358):—“Ballymena, 9 Oct., 1891. . . . You asked the question when I brought the bird under your notice, and after I had the conversation with you I saw the bird *alive*, and had it out of the cage in my hand. Its eyes were pink. . . . Robert A. Simms.” Respecting the phrase “as in all albinos,” I hold (with I believe naturalists in general) that unless a white animal or bird has the eyes (iris) pink, it is to be regarded as a white variety, and not as an albino. I wrote to Mr. A. D. Bartlett, Superintendent of the Zoological Gardens, London, on this subject, and his reply is embodied in an interesting note which he has since sent to ‘The Field’ (Oct. 17, p. 581), and from which I extract the following:—“A perfect albino is an animal entirely destitute of colouring pigment: in fact, the only colour in its composition is flesh and blood; consequently animals thus composed, if covered with hair or feathers, are white, their skin flesh-coloured, and their eyes pink.” I also wrote to the Directors of various Continental Zoological Gardens which I recently visited, and have received some interesting information. Herr Adolf Schoepf, of the Dresden Gardens, has sent me an account of an albino Halsbandbär (*Ursus malayanus*), and from his remarks it is evident that he also is of the opinion that a white animal is not an albino unless its eyes are pink. He writes:—“On the 21st February the little white Bear opened its eyes for the first time; it was then apparent that it was an albino, for it had pink eyes.” In my note (Zool. 1891, p. 317) I mentioned that three albino Twites were produced from one nest. Herr Schoepf tells me that he has at present, living in the Gardens at Dresden, four creamy-white Blackbirds obtained from one nest, all having pink eyes. In addition to these he has (with pink eyes) *Ruticilla tithys*, *Sturnus vulgaris*, *Pica rustica*, *Corvus monedula*, and one white example of the latter without pink eyes. The following embraces the information received from other Gardens with regard to white specimens:—Rotterdam: with pink eyes, *Cavia cutleri*, *Mus musculus*; without pink eyes, *Sturnus vulgaris*, *Pica rustica*, *Corvus monedula*. Hamburg and Berlin: without pink eyes, *Corvus monedula*.—EDGAR R. WAITE (The Museum, Leeds).

Spotted Eagle in Suffolk.—We have recently (Nov. 21st) set up a specimen of the Spotted Eagle which was shot at the Sudbourne Hall Estate, Wickham Market, Suffolk, and has been sent to us for preservation by Mr. J. J. Hornby. It proved on dissection to be a male, and its stomach contained the remains of a water rat and a partridge. It was killed on Nov. 4th. Another bird had been seen in its company, and is

probably the one that was caught alive at Colchester, as recorded by Mr. H. Laver (Zool. 1891, p. 470). The bird sent to us was in perfect plumage, beautifully spotted, and evidently in its second year; it weighed $3\frac{1}{2}$ lbs.—PRATT & SON (11, North St. Quadrant, Brighton).

Grey Phalarope in Leicestershire.—A Grey Phalarope, in winter plumage, was shot on Oct. 16th, near the Saddington Reservoir, in this county, by Mr. E. T. Turner. It is now in his collection.—A. MATTHEWS (Gumley, Market Harborough).

Grey Phalarope and Arctic Tern in Warwickshire.—On October 20th, 1891, the south-westerly gales were probably responsible for blowing a specimen of the Grey Phalarope, *Phalaropus fulicarius*, to Bentley Heath. I have heard of others in this district. On the 15th of the same month an adult male Arctic Tern, *Sterna macrura*, was found on the grass in Edgbaston Park, within the boundaries of the city of Birmingham. The poor bird (an unusually small specimen when compared with others) was quite exhausted, and was brought to me alive. A considerable flight of the Common Tern (*Sterna fluviatilis*) passed over the Midlands during the middle of August, 1891. Some thirty or forty were seen at Bracebridge Pool, Sutton Coldfield, Warwickshire; several (some of which I received, at Earlswood Reservoir, in the same county; and a good number reported to me from Crofton Reservoir, Worcestershire.—F. COBURN (7, Holloway Head, Birmingham).

Grey Phalarope in Ireland.—I see, by notices in various English papers, that Grey Phalaropes have been seen in various parts of England. The following Irish occurrences have come under my notice, all in October. On the 3rd a male was shot on Lough Neagh, and a female was obtained on the 18th on the northern shores of the same lough. One was procured at Greencastle, Co. Donegal, on the 10th, and a second was captured alive at the same place on the 16th. One was sent up from Carlow on the 23rd, and another on the 26th, both males. A male and a female were shot in Dundrum Bay, Co. Down, on the 26th; and a female at Annalong, Co. Down, on the 16th. Mr. R. M. Barrington writes me that four were received by him on the 23rd, from Killybegs, Co. Donegal; two from Rathlin O'Birne, in the same county, shot on the 12th; and one from Slyne Head South, Galway, shot on the 6th; while in 'The Field' of November 2nd one is recorded from Donegal Bay, shot on the 16th. It will be noticed that, of the seventeen here recorded, nine are from Co. Donegal.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

Hobby preying on Swallows.—In September, 1890, a young friend of mine, who is particularly interested in bird-life, told me that on several occasions he had watched the Swallows as they came in the evenings to

roost in the reed-beds by the river-side, and that invariably a small dark-coloured Hawk was to be seen somewhere about the neighbourhood at the same time, and that more than once he had seen it "strike" a Swallow and make off with it. During the past autumn he observed the same thing; and one evening he saw the Hawk sitting upon an old willow-stump, amongst the reeds, almost close to the water, and from his description I concluded it was a Hobby. On the 23rd of September last I was somewhat vexed that my supposition as to the species had apparently been verified, for a wildfowl shooter brought me a small Hawk for identification, which he had killed at the very spot the previous evening. It was a small male Hobby, but in a very wet and mutilated state, as it had fallen in the water when shot, and could not be found at the time. It is possible that this was the same bird that had frequented the reed-beds a year previously. Does the Hobby migrate in the same direction as the Swallows, and, if so, was this bird following the flocks to a warmer climate, thus ensuring food and companionship on the journey? I recollect the time when this handsome little falcon was not so scarce in the New Forest as it is now; when its chase after the dragonflies over the ponds, or its rapid dart after the dor beetle booming away into the increasing dusk, showed how active it could be when necessary; but these interesting scenes, and others of a kindred type (especially with regard to the British Falconidæ), are, I fear, rapidly becoming "things of the past."—G. B. CORBIN (Ringwood, Hants).

Great Northern Diver off Brighton.—I received lately a fine specimen of the Great Northern Diver, *Colymbus glacialis*, which was taken near Brighton on Dec. 9th. It had only half completed the change to winter plumage.—H. SWAYSLAND (Brighton).

Baillon's Crake in Hertfordshire.—On Oct. 24th I shot a specimen of Baillon's Crake, *Porzana Baillonii*, on the marshes near Cheshunt, which were flooded at the time. It was in good plumage, but rather thin. It is in the hands of Mr. Rowland Ward for preservation, by whom it was identified. Is not the occurrence of this bird so near London rather unusual?—W. H. M. AYRES (Oakville, Holly Park, Crouch End).

[We have no record of the occurrence of this species in Middlesex; but a specimen of the Little Crake, *Porzana parva*, Scopoli, was obtained many years ago on the banks of the Thames at Chelsea.—ED.]

Rare Birds in North Devon.—I have lately received from Barnstaple some birds which were obtained in the estuary of the Taw at the time of the severe October gales. They include two species—the Dusky Redshank and Buffon's Skua—which I have not before been able to add to the list of North Devon Birds. The specimen of Buffon's Skua is almost in adult plumage; the breast and throat are white barred with ash-grey, instead of being pure white, and the grey mantle has some of

the feathers still margined with a darker shade; in the length of the tail, which is fully ten inches, the bird shows its close approach to the fully adult state. There would appear to have been several adult Buffon's Skuas about the river when this specimen was procured, and I have been informed that they were called locally "Fork-tailed Petrels." Two Manx Shearwaters, and a Great-crested Grebe, the last in almost mature plumage, have also been sent to me. — MURRAY A. MATHEW (Buckland Dinham, Frome).

Petrels and Phalarope in the Isle of Man.—Referring to the recent occurrence of many Petrels in Ireland (Zool. 1891, pp. 468, 469) I may mention that, being at Peel on the evening of Sept. 27th, I saw two in the bay of that town. They were flying backwards and forwards near the shore wall, dipping to the surface of the water in their characteristic way, and coming so close that I could distinctly see the thin light-coloured line across their wings. As the town houses extend all along the beach, the birds attracted a number of boys, who threw stones at them and quickly drove them away. About the same date a Petrel was procured in the south of the island. I cannot say positively whether these belonged to the Stormy or Fork-tailed species. In November a Grey Phalarope was picked up on the Peel railway line near Union Mills, $2\frac{1}{2}$ miles inland from Douglas. It seemed to have been killed by striking the telegraph-wires. — P. RALFE (4, Queen's Terrace, Hawarden Avenue, Douglas, I.M.).

Grey Phalarope in Devon.—During the months of October and November last, large flocks of Phalaropes were seen all along our coast, driven here probably by the S.E. winds which raged violently during the former month. Hundreds of these birds were seen by Mr. E. A. S. Elliot at Milton Sea and Huish Sea, on the South coast; and in a letter which I received from that gentleman he states:—"It was a sight never to be forgotten, as I stood on the shore watching these birds." At Exmouth also they appeared in flocks, and, on paying a visit to the taxidermist in that town, I was shown some twelve or fifteen specimens which had been brought in for preservation. The last great immigration of these birds to Devon appears to have been in the year 1870, but almost every year a few stragglers are seen.—WM. E. H. PIDSLEY (Exeter).

Red-necked Phalarope in Ireland.—On the 13th November last I received a female specimen of this bird, *Phalaropus hyperboreus*, shot by Mr. J. Haire, of Loughgilly, Co. Armagh. When first observed it was "going round like a wheel on the water." I believe this is the first recorded Irish occurrence.—E. WILLIAMS (2, Dame Street, Dublin).

[In his 'List of Irish Birds' (1885), Mr. A. G. More remarks (p. 20):—"The Red-necked Phalarope, which breeds in several parts of the West of Scotland, has not yet been found in Ireland, though it might well be

expected to occur." The present announcement, therefore, is of much interest to ornithologists.—ED.]

Nesting of the Magpie.—In the last volume of 'The Zoologist' (pp. 351, 430) there were notes as to Magpies building in low bushes and hedges. In Norway they nearly always prefer bushes, if procurable. Whilst travelling, in 1890, in the Saetersdäl, I observed that—as noticed by Mr. Saunders in his 'Manual of British Birds'—very often the nests were built under the eaves of the houses. In some cases the peasants had placed large props under the eaves for the nest to rest upon; in others the nest appeared to be built half inside the house, between gaps in the timbers. The Magpie is regarded as a bird of good omen, and it is consequently encouraged as much as possible to nest near the houses. In one place I saw, in a low fir-tree close to a house, no less than nine Magpies' nests. I never heard before of Magpies nesting in colonies.—S. A. DAVIES (The College, Winchester).

Raptorial Migrants in East Anglia.—An unusual number of raptorial migrants have appeared in East Anglia during the past autumn. Short-eared Owls have been more abundant than for some years past, and such a visitation of Rough-legged Buzzards has not occurred since 1876. Mr. Howlett, of Newmarket, has had one from Cambridgeshire and four from West Suffolk. One of these was obtained on Nov. 27th in a singular manner:—"A brace of Greyhounds (writes Mr. Howlett) had been slipped at a Hare, and were racing her along the side of a fence, when between them and the hare a Rough-legged Buzzard flew out of the fence. This took the greyhounds so aback that, losing sight of their hare, they dashed at the Buzzard, and one dog, seizing it by a wing, broke it; the bird, however, showed fight, and punished its captor severely with beak and talons until the keeper came up and knocked it on the head." The Buzzard was a male bird, in fine plumage, and seemed to me to be very dark in colour. Two more at least were shot in West Suffolk, one at Troston, about Nov. 1st, forwarded to the National collection, and another at Gislingham. Mr. Travis, of Bury, showed me the latter bird in the flesh, on Nov. 25th; side by side with it, on his counter, was a female Hen Harrier, shot near Newmarket. The rich fawn and creamy tints of the freshly-killed Rough-legged Buzzard were most beautiful, but they had considerably faded when I saw it again a week later, after it had been skinned. The change was so marked that I was reminded of the difference between a half-open "Gloire-de-Dijon" rosebud and the fully expanded flower. A handsome young Peregrine, which came into my possession, was caught in a trap near Bury on Nov. 17th. But the most noteworthy visitant last autumn was a male Spotted Eagle, shot at Sudbourne, in East Suffolk, on Nov. 4th, of which full particulars were given in 'The Field' of Nov. 28th.—JULIAN G. TUCK (Tostock Rectory, near Bury St. Edmunds). [See Messrs. Pratt's note, p. 25.—ED.]

Buffon's Skua in West Suffolk.—An immature Buffon's Skua was found dead about the middle of November, near Newmarket, on the Suffolk side of the town. It was "very far gone" when picked up, but Mr. Howlett, to whom it was taken, just managed to mount it and make it into a presentable specimen. This bird is only the second of the species known to have occurred in Suffolk.—JULIAN G. TUCK (Tostock Rectory, near Bury St. Edmunds). [This apparently is the bird above noticed by Messrs. Pratt and Son.—ED.]

Nidification of the Bar-tailed Godwit.—So few authenticated eggs of *Limosa lapponica* have been received in this country that I was glad to obtain lately, from a reliable Swedish correspondent, two clutches of four eggs each, especially as they were accompanied by some interesting particulars respecting their discovery. It appears that three years ago a Finnish friend of his heard from the natives that this bird was found sparingly, during the breeding season, on a certain very extensive moor near Kittila; and after several days' search he succeeded in finding one nest. The female bird sat so closely that she did not rise until nearly trodden on, the male meanwhile flying in wide circles round the nest, and drawing nearer as the intruder approached it. Thus ample opportunity was given for identifying both parent birds. Last summer several nests were found, containing, I understand, sixteen eggs in all; two with four eggs, one with two, and two with one egg each. The two with four eggs having come into my possession, I am able to some extent to differentiate them from those of *Limosa melanura*. They are on an average of larger size, though possibly, when more specimens come to hand, this difference may not be found constant. I can only state now that those I have received are as large as the largest eggs of the Black-tailed Godwit I possessed, and more uniform in size and shape. They are different in texture, and more glossy than eggs of their congener—indeed are altogether handsomer eggs, and more like those of the Whimbrel, *Numenius phaeopus*. Although larger than those of the Black-tailed Godwit, they are decidedly of less weight. I tested them against a score of the others; but although some of the latter were much smaller specimens, yet in every instance those of the Bar-tailed Godwit were considerably the lightest. I conclude, therefore, that the eggs I have now received may with confidence be regarded as correctly identified, especially as I am informed that the Black-tailed Godwit is only known to breed in Scandinavia on the island of Oland, in the extreme south, and some 800 miles from Kittila. I may add, in anticipation of enquiries, that the eggs in question have already been disposed of.—H. W. MARSDEN (21, New Bond Street, Bath).

Songs of Birds reared from the Nest.—Mr. Charles A. Witchell ('Zoologist,' 1891, pp. 398-9) says that he "shall be glad to receive notes

relative to bird song." I therefore think it worth while to record a few facts relative to birds which I have at various times reared from the nest. Of cock Nightingales which I reared there is no song to record: one of them (proved after death to be a cock) never sang in my hearing; but was said to have sung splendidly at daybreak one morning when about a year old. A Missel Thrush, which was undoubtedly a cock, invariably sang two notes only, one high, the other low; producing a most melancholy and wearying repetition of sound from morning till night. A Blackbird reared from the nest sang the first line of 'Villikins and his Dinah,' and another sang the first line of a Psalm-tune. A cock Starling sang a jumble of sounds mixed with the guttural call-note of the Missel Thrush. A Sky Lark sang the usual wild song, but introduced into it the song of the Persian Bulbul, which greatly improved it. Chaffinches, unless absolutely isolated, readily pick up the wild song; but if kept in the same room with Canaries, their song is lengthened (and thus improved), though not altered in its character. With regard to Mr. Witchell's remarks anent my Redwings, they might be applicable if the birds had not begun to sing before they had heard my Chaffinches. Even then the scale of the Redwing, though reminding one of that of the Chaffinch, is very different in its tone and rapidity of utterance.—A. G. BUTLER (Beckenham).

Persistent Brooding of the Ringed Plover.—The following remarkable instance of persistent brooding of a Ringed Plover, *Ægialitis hiaticula*, came under my observation during the past breeding season, at St. Anne's-on-the-Sea, Lancashire:—On May 26th, whilst strolling along the beach on the look-out for nests, I observed a Ringed Plover running off in a suspicious manner about twenty yards away on the shingle, and on coming to the spot I found a nest containing four corks,—ordinary beer-bottle corks, which lie about the beach in hundreds. Thinking this the trick of some school-boy I threw the corks away, and gave the matter no further thought. However, three or four days after, passing the same spot, I surprised the bird again, sitting on three corks. I forget whether I threw these away or not. On June 7th I again put the bird off the nest, which this time contained four corks. These I threw away. On July 19th, six weeks later, I visited the place again, and, to my surprise, put a bird off from a nest about two yards from the site of the old one. This contained four corks, one of which I threw away. The first nest was full of sand, and only recognisable by the few fragments of shell which had originally lined it. On July 26th I surprised the bird again upon the nest, finding on this occasion four corks and half a cork. I threw them all away but the half cork, and lay down to watch. In a short time the bird came back and sat on the nest. Some people passing disturbed it and it ran off, soon, however, to come back. This happened several times, until a lady with some

children sat down on a sandhill in full view of the nest, when the bird ran off and then flew away. I marked two corks and dropped them near the nest before leaving. The following day, towards evening, I again visited the nest, put the bird off, and found the two marked corks in the nest and the half cork six inches away. These I threw away, and again lay down to watch. The bird soon came back, and settled down in the empty nest for a short time. Soon, however, it got up again, and after this seemed uneasy, as it would stay in the nest for a minute or two, then run away a short distance, only to return. This was repeated several times. As it got too cold to watch I went away, leaving two or three corks near the nest. There was a heavy storm of wind and rain on the night of the 28th, and on visiting the spot once more, on the 29th, I found nothing but a few fragments of shell to mark the spot. I left St. Anne's on the 31st, and did not return for two months. During my various visits to the spot, which were made at all hours of the day, I never once observed anyone at the nest, and cannot help thinking that the bird itself put the corks in the nest—at any rate after they had been thrown away once.—FRANK BROWNSWORD (St. Anne's-on-the-Sea, Lancashire).

[In the article on the "Nesting habits of the Ringed Plover," which appeared in 'The Zoologist' for December last, a misprint occurred which should be corrected. On p. 447, line 32, for "deep holes apparently found by the birds" read "formed by the birds."—ED.]

Additions to the Avifauna of Donegal.—The following species may be added to my List of Donegal Birds: they have been reported by Mr. D. C. Campbell, of Ballynagard House, Londonderry, and were obtained during the storms of the first ten days of October last:—

Roller, *Coracias garrulus*, Linn.—One was shot by Mr. John M'Connell on Burt Level Slob, Lough Swilly, on October 10th. This is the bird recorded by Mr. R. Patterson, p. 33. The species has occurred five or six times in Ireland, chiefly in autumn.

Grey Phalarope, *Phalaropus fulicarius*, Linn.—Two were shot at Greencastle, on the west side of Lough Foyle, on the 13th or 14th of October. Mr. Campbell writes, "Through the kindness of Mr. P. Crosbie I was enabled to examine and identify them." From the description Mr. Crosbie gave us a day after the occurrence I had little doubt they were Phalaropes, but the Grey Phalarope is a rare and uncertain winter visitor to Ireland.

Pink-footed Goose, *Anser brachyrhynchus*, Baillon.—Mr. Campbell writes:—"The prize, from an ornithological point of view, brought in by the storm, was a Pink-footed Goose, which I had the good fortune to find in Mr. Divine's poultry-shop, on October 21st. It is a new bird to the

Irish list. Mr. Patterson has confirmed my identification of the species, and I have sent it to him to be placed in the Belfast Natural History Museum."—H. CHICHESTER HART (Carrablagh, Portsalon, Letterkenny).

[See Mr. Patterson's note on this specimen below.—ED.]

Pink-footed Goose in Ireland.—About the 19th of October last a Pink-footed Goose, *Anser brachyrhynchus*, was shot on Lough Swilly, and sold to a poulterer in Londonderry. It was bought by Mr. D. C. Campbell, of that city, who had it preserved, and he sent it to me to be identified. It is undoubtedly a Pink-footed Goose, and the first recorded from Ireland. It is about 28 inches long, with pink legs and feet, and pink on bill well marked. Mr. Campbell has generously presented it to the Belfast Museum.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

Roller in Co. Donegal.—I have examined a Roller (*Coracias garrulus*) which was shot on October 10th at Burt Level Slob, Co. Donegal, as I am informed by Mr. D. C. Campbell. It was feeding in a field of oats and beans, and had evidently been searching for insects, as its bill had some earth adhering to it.—ROBERT PATTERSON.

Bernacle Goose at North Berwick.—It may perhaps be worth recording that a fine female Bernacle Goose, *Bernicla leucopsis*, was shot on October 22nd, 1891, at North Berwick, and is now in my possession. This is the only one I have had for several years past; formerly they were fairly common in our Market Hall almost every winter.—F. COBURN (7, Holloway Head, Birmingham).

Bernacle Goose at Scarborough.—During the early part of September last a large flock of Bernacle Geese was seen frequenting the coast to the north of Scarborough. On Sept. 19th twenty-nine of these birds were seen at Low Fields Farm, Brompton, about nine miles from Scarborough, and two of them were shot. One which I examined appeared to be a mature bird, in full plumage, but, having been skinned, I was unable to distinguish the sex.—WILLIAM J. CLARKE (44, Huntriss Road, Scarbro').

A White Java Sparrow.—When staying at Brighton a short time ago I saw a white Java Sparrow at a bird fanciers, and I particularly noticed it had *black* eyes.—PERCY F. BUNYARD (3, Wellington Road, Ashford, Kent)

Bittern in Co. Meath.—A specimen of the Common Bittern, *Botaurus stellaris*, was shot by me on November 12th at Randlestown, near Navan, Co. Meath. It rose within twenty yards of me, from the side of a drain in an open field. Two good-sized frogs were extracted from its gullet.—JOHN BENSON (Randlestown).

Fork-tailed Petrel in Ireland.—As additions to my note of Fork-tailed Petrels in Ireland (Zool. 1891, p. 468), I may state that on October 6th one was found dead in the city of Derry; on the 13th one was seen flying

up the river there, alongside the quays. On the morning of the 14th of October two were seen alighting on the grass in Crawford Square, Derry; after resting for a short time they took flight, seemingly much exhausted. Two Fork-tailed and three Storm Petrels were picked up on Rathlin Island during the month of October. Three Fork-tailed Petrels were seen near Kilkeel, Co. Down. — ROBERT PATTERSON (1, Windsor Park Terrace, Belfast),

Rare Birds at Kingsbridge, South Devon.—During the tempestuous weather of Oct. 14th and succeeding days, a large flock of Grey Phalaropes were on the coast. I found it very interesting watching the buoyant little swimmers on the morning of the date mentioned; they would allow the incoming wave to wash them almost high and dry on the sands, and then, as the succeeding billow threatened to engulf them, they would rise from the water, just top the wave, and settle a little farther out. This went on the whole time I was on the sands. As to numbers, there were hundreds along the shore of the bay, and, after counting as many as sixty from where I stood, I had to give up the task on account of the sand and spray drifting into my face. A good many birds sought shelter in the fresh water of the Leas, and these appeared to be seeking food along the edges of the grassy banks. On the following day I again visited Thurstone Sands, and found the majority of the birds had passed on; but saw, at the exit of Milton Lea, a Buffon's Skua, which I shot. Numbers of these birds had been shot at the same place on the previous day, having come in after I had left the sands; but a record of these birds will reach the pages of 'The Zoologist' from another source. On the 19th, as I had been told by a Beesands fisherman that there were a lot of so-called "mackerel birds" in Start Bay, I determined to ascertain, if possible, their species. Arriving at the little fishing hamlet, I found the surf breaking very heavily on the shore; but two muscular young fishermen instantly offered to launch their boat when they learnt my errand. We got afloat, and soon they pointed out the "mackerel birds," which were easily identified as Terns, both the Common and Arctic species. I had secured specimens of both, and was rowing along not far from the shore, when my attention was arrested by a small dark Gull—the difference of flight between this bird and the Terns being marked—coming towards us; it afforded an easy shot, and was dropped. When I got it into the boat I saw by its forked tail I had secured one of the rarest Gulls in the British list, namely, a Sabine's Gull in immature dress. The figure in the last edition of Yarrell's 'British Birds' gives a very accurate representation of the bird. On dissection the sex proved to be female. On the following day a Scoter was brought me, which had been shot on the estuary. I casually looked at the bird, and thought it a Common Scoter, and should have sent it away but for the answer of the boy, who said, "Father told me to fling it into the tide if you didn't

want it." That being the case I retained it, and, on a more careful examination, was struck by the size of its head, the high arching of the bill, as well as the feathered culmen, and the white spots about the head, while the absence of white on the wing showed that it was not the Velvet Scoter; it proves to be a young male Surf Scoter, *Ædemia perspicillata*, and the entire absence of fat from the body leads me to suppose it had recently been driven on our coast. The stomach contained marine grass, small shells, and pebbles. Dr. Elliot-Coues, in his 'Key to North American Birds,' gives a very good figure of the head of the young male of this species, which is very different in marking to the adult male or female.—EDMUND A. ELLIOT (Kingsbridge, South Devon).

Variation in Plumage of Woodpeckers and Nuthatch.—My experience points to the fact that Woodpeckers—and especially the green species—are not liable to much variation in plumage, although we sometimes see a specimen the pale yellowish green of the under parts of which is dappled with darker arrow-headed markings, attributable, I think, to immaturity. A short time ago I saw a male Green Woodpecker, the upper plumage of which was unusually bright with its mixtures of green and yellow; but the whole under parts, from beak to tail, were of a uniform dark leaden grey, reminding one of the breast and belly of the Water Rail, *Rallus aquaticus*. It had been badly shot, and, being in an advanced state of decomposition, was not preserved. I recollect a few years ago seeing a Nuthatch, the entire plumage, especially the under parts, of which were of the same dark hue. Is it likely that the bark of trees has anything to do with darkening the lighter parts of the plumage of scansorial birds? The white patches upon the plumage of *D. major* and *minor* are often more or less tinged with a dusky shade, whilst, on the contrary, I once saw a *Picus viridis*, the colours of which appeared to be washed out; and even the larger wing-feathers, usually dappled with white, were of a uniform dull buff. Whilst on the subject of variation in Woodpeckers, I may mention a white *D. major*, which some readers of 'The Zoologist' may have seen in a woodman's cottage in the Forest, and which eventually, I believe, was purchased by the late Mr. Marshall, of Belmont, Taunton.—G. B. CORBIN (Ringwood).

Spotted Redshank in Co. Dublin.—On the 24th September last I was fortunate enough to shoot a specimen of this rare wader on the shore of Baldoyle Estuary. This, I believe, makes the fourth recorded occurrence of *Totanus fuscus* on our east coast, the three other specimens obtained in Ireland having been shot by Mr. Warren, of Moyview, Ballina, in the Moy Estuary (Zool. 1887, p. 468, and 1889, p. 35). My specimen is a bird of the year, having the breast clouded over with dusky grey. — E. WILLIAMS (2, Dame Street, Dublin).

FISHES.

Bonito on the Cornish Coast.—On Nov. 16th I had brought to me a fine specimen of the Bonito, *Thynnus peliamis*. The fish was 2 ft. 2½ in. in length, its girth behind the pectoral fin 1 ft. 4½ in., and weighed 13¼ lbs. The occurrence of this fish on the coast in spring is not uncommon; but I have never heard of one being found so late in the year before. The specimen referred to was washed ashore dead.—T. H. CORNISH (Penzance).

 SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 19, 1891.—Prof. STEWART, President, in the chair.

Mr. W. L. Brown was admitted a Fellow of the Society.

Mr. S. Jennings exhibited a collection of wild flowers made by him during a recent tour through the Rocky Mountains, California, and Mexico.

Prof. G. B. Howes exhibited some dissections of fish crania made by his pupil, Mr. R. H. Burne, B.A., in which the parts of the skeleton were so displayed that they might be studied in relation to the rest of the head and to the leading cranial nerves.

Mr. E. F. Cooper exhibited specimens of a new variety of *Potamogeton* from Loughborough, lately described and figured by Mr. Alfred Fryer (Journ. Bot., Oct. 1891).

Mr. A. W. Bennett exhibited and made remarks upon some specimens of *Hydrodictyon utriculatum*, Roth. (*H. reticulatum*, De Toni), and some drawings of anomalous *Cypripedium* and *Disa*.

Mr. W. Carruthers gave a graphic account of a recent visit to Sweden in search of original portraits of Linnæus, and detailed the results of his enquiries. His remarks were illustrated by an exhibition of engravings and photographs.

A paper was then read by Mr. Thomas Hick, "On a new fossil plant from the Lower Coal Measures." An interesting discussion followed, in which Mr. Carruthers, Mr. G. Murray, Prof. F. O. Bower, Prof. Marshall Ward and others took part.

Dec. 3.—Prof. STEWART, President, in the chair.

The following were elected Fellows:—Sir Walter Sendall, Messrs. T. M. Macknight, W. A. Blaker, C. Frost, H. Sutherland, J. Keys, W. S. Campbell, A. Molineux, and W. H. Strachan.

The President announced the recent bequest by the late Sir George MacLeay, K.C.M.G., of a marble bust of his father the late Dr. William Sharp MacLeay, formerly a Fellow and Vice-President of the Society.

The President then exhibited a series of specimens of a South American

beetle, showing the extremes of variation of colour observable within the limits of a single species.

Mr. J. E. Harting exhibited a photograph of an abnormally situated nest of the Chimney Swallow, *Hirundo rustica*, which had been built for the second time on a swinging hook in an outhouse, and made some remarks on three recorded cases of Swallows nesting in trees, a most unusual habit.

The Botanical Secretary read a paper by Mr. W. West on the Fresh-water Algæ of the West of Ireland, and exhibited, by way of illustration, a number of preparations under the microscope and a series of beautiful drawings by the author. The paper was criticised by Messrs. A. W. Bennett and E. M. Holmes, both of whom testified to the excellence of the work done and the value of the drawings.

The Zoological Secretary next read a paper by Mr. W. H. Strachan on the Tick Pest of Jamaica, which was characterised as of so serious a nature as to demand investigation by entomologists, with a view to a remedy. An interesting discussion followed, in which Mr. D. Morris gave a variety of details from personal experience during a residence of seven years in Jamaica, and Mr. A. D. Michael pointed out the generic characters of certain West Indian Ticks which were likely to include those found in Jamaica by Mr. Strachan. The question of remedy for this plague was discussed by Dr. John Lowe and Messrs T. Christy, C. Breeze, and T. J. Briant.

ZOOLOGICAL SOCIETY OF LONDON.

Nov. 17, 1891.—Dr. A. GUNTHER, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during October, and called special attention to the following:—A young Buffon's Skua, *Stercorarius parasiticus*, captured near Christchurch, Hampshire, and presented by Mr. E. Hart; and a Land-Crab, *Geocarcinus ruricola*, from the island of Fernando Noronha, brought home and presented by Mr. D. Wilson-Barker.

The Secretary read a letter from Dr. G. Martorelli, of Milan, enclosing a coloured drawing of both sexes of a hybrid Duck bred in the Public Garden of Milan, between *Branta rufina*, male, and *Anas boscas*, female.

Mr. G. A. Boulenger gave an account of the various forms of the Tadpoles of the European Batrachians, and a statement of the characters by which the different species may be distinguished in this stage of their existence.

A communication was read from Mr. Edgar A. Smith, containing descriptions of new species of shells from New South Wales, New Guinea, and the Caroline and Solomon Islands, based on specimens lately presented to the British Museum by Mr. John Brazier, of Sydney.

Lord Walsingham gave an account of the Micro-Lepidoptera of the West Indies, based primarily on the collections made in St. Vincent and

other islands by Mr. H. H. Smith, under the direction of the joint Committee of the British Association and the Royal Society for the exploration of the Lesser Antilles.

A communication was read from M. E. Simon, containing the first portion of an account of the Spiders of the island of St. Vincent, based on specimens obtained under the direction of the same Committee.

A communication was read from Mr. H. Nevill, urging the importance of founding an experimental Zoological Station in the Tropics, and advocating the claims of Trincomalee, in Ceylon, for such an institution.

Dr. Johnson Symington read a paper on the nose, the organ of Jacobson, and the dumbbell-shaped bone in the *Ornithorhynchus*.

Mr. A. Smith-Woodward read a paper on a mammalian tooth from the Wealden Formation of Hastings, being the first trace of a Cretaceous Mammal discovered in Europe. This remarkable fossil the author was inclined to refer provisionally to the genus *Plagiaulax* of the Purbeck Beds, and to call *Plagiaula dawsoni*, after its discoverer.

A communication was received from Mr. C. Davies Sherborne, giving an exact account of the dates of issue of the parts, plates, and text of Schreber's 'Säugethiere.' Great difficulties in synonymy had arisen from previously imperfect knowledge of these dates.

December 1.—HENRY SEEBOHM, F.L.S., F.Z.S., in the chair.

Mr. Sclater exhibited a specimen of a Shearwater obtained near Sydney, and brought from Australia by Prof. Anderson Stuart. This specimen had been determined by Mr. Salvin to belong to *Puffinus gavia*, a New Zealand species not hitherto known to occur in Australia.

Mr. Seebohm exhibited and made remarks on specimens of several very interesting birds recently obtained in Ireland. Amongst these was an example of the Yellow-browed Warbler, *Phylloscopus superciliosus*, obtained on the Tearaght Rock, the most westerly station in Europe. [These were recorded in 'The Zoologist,' 1891, p. 186.]

Dr. E. Hamilton exhibited a specimen of the Red-breasted Snipe of North America, *Macrorhamphus griseus*, obtained in Scotland. [Recorded in 'The Zoologist,' 1891, p. 427.]

Mr. W. B. Tegetmeier exhibited the heads of a cock Pheasant and two Rooks, illustrative of the abnormal form of the bill in birds caused by injuries to that organ during life.

Mr. G. A. Boulenger read some notes on specimens of Reptiles from Transcaspia recently received by the British Museum, and pointed out that examples of several well-known Indian species occurred in this collection.

A communication was read from Miss E. M. Sharpe, containing the second portion of her descriptions of new Butterflies from British East Africa, collected by Mr. F. J. Jackson during his recent expedition.

Mr. A. D. Michael read a paper upon the association which he had observed between certain Acarines of the family *Gamasidæ* and certain species of Ants. The author came to the following conclusions:—(1) that there is an association between some Gamasids and Ants; (2) that a species of Gamasid usually associates with one or two species of Ant preferentially; (3) that the Gamasids of Ants' nests are not usually found elsewhere; (4) that the Gamasid abandons the nest if the Ant does; (5) that the Gamasids live upon friendly terms with the Ants; (6) that the Gamasids are not true parasites; (7) that they do not injure the Ants or their young; (8) that the Gamasids will not eat dead Ants, and are probably either scavengers or messmates.

A communication was read from Mr. Edward Bartlett, containing an account of the specimens of Rhinoceros from Borneo contained in the Museum of Sarawak.

A communication was read from Mr. T. T. Somerville, of Christiania, containing notes on the Lemming (*Myodes lemmus*).—P. L. SCLATER, Sec.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 2, 1891—The Rt. Hon. Lord WALSINGHAM, M.A., LL.D., F.R.S., Vice-President, in the chair.

Mr. Henry A. Hill, of 132, Haverstock Hill, Hampstead, N.W.; Mr. Frank Nelson Pierce, of 143, Smithdown Lane, Liverpool; and Mr. Carleton F. Tufnell, of Greenlands, Border Crescent, Sydenham, S.E., were elected Fellows of the Society.

Dr. D. Sharp exhibited and commented on a number of photographs of various species of *Lucanidæ* belonging to M. René Oberthür.

Mr. C. G. Barrett exhibited a number of specimens of local forms and varieties of Lepidoptera, taken by Mr. Percy Russ near Sligo, including *Pieris napi*, var. near *bryoniæ*; *Anthocharis cardamines* (male), with the orange blotch edged with yellow, and yellowish forms of the female of the same species; very blue forms of *Polyommatus alsus*; males of *P. alexis*, with the hind margin of the under wings spotted with black, and very handsome forms of the female; also varied series of *Agrotis cursoria*, *A. tritici*, *A. valligera*, *Hydræcia micacea*, *H. nictitans*, *Epunda lutulenta*, *Hadena protea*, *Odontoptera bidentata*, *Cidaria immanata*, *C. testata*, *C. pyraliata*, and *Boarmia repandata*.

The Rev. S. St. John exhibited two specimens of *Lycæna argiades*, taken in Somersetshire by Dr. Marsh in 1884; three specimens of *Deilephila euphorbiæ*, bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast in September, 1889; and a series of various forms of *Anchocelis pistacina*, all taken in a garden at Arundel. Lord Walsingham, Mr. Barrett, and Mr. McLachlan took part in the discussion which ensued.

Mr. Jenner Weir exhibited and made remarks on two dark specimens of *Zygæna minos* which had been caught by Mr. Blagg in Carnarvonshire. He remarked that the specimens were not representatives of complete melanism, and suggested that the word "phæism"—from φαῖός, dusky—would be a correct word to apply to this and similar departures from the normal coloration of a species.

Mr. C. J. Gahan exhibited specimens of the common "book-louse," *Atropos pulsatoria*, Fabr., which he had heard making a ticking noise similar to that made by the "death-watch" (*Anobium*).

Mr. B. A. Bower exhibited the following rare species of Micro-Lepidoptera:—*Spilota pauperana*, Fröl.; *Gelechia osseella*, Stn.; *Chryso-elysta bimaculella*, Haw.; and *Elachista cingilella*, Fisch. Lord Walsingham and Mr. Tutt made some remarks on the specimens.

Mr. R. Adkin exhibited a variety of *Anthocharis cardamines*, and one specimen of *Sesia scoliæformis* bred from a larva found at Rannoch.

Mr. G. T. Baker read a paper entitled "Notes on *Lycæna* (recte *Thecla*), *Rhymnus*, *Tengstræmii*, and *Pretiosa*." A discussion followed, in which Lord Walsingham, Capt. Elwes, and Mr. Baker took part.

Mr. F. Merrifield read a paper entitled "The effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." The author stated that both broods of all three species of *Selenia*, *Platypteryx fulcataria*, *Vanessa urticæ*, *Bombyx quercus* and var. *callunæ*, and *Chelonia cæja* were affected by temperature in the pupal stage, the lower temperature generally producing the greater intensity and darkness of colour; some of the *Vanessa urticæ* made a near approach to the var. *polaris* of Northern Europe. A long discussion ensued, in which Mr. E. B. Poulton, Mr. McLachlan, Prof. Meldola, Mr. Barrett, Mr. Jenner Weir, and Lord Walsingham took part.

Mr. W. Bateson read a paper entitled "On the variation in the colour of the cocoons of *Eriogaster lanestrís* and *Saturnia carpini*," and exhibited a large number of specimens in illustration of the paper. Lord Walsingham congratulated Mr. Bateson on his paper, and on the intelligent care and method shown in his experiments, and said that he was glad to see that at Cambridge there was an entomologist ready to enter this interesting field of investigation, and perhaps at some future day to contest the palm with Mr. Poulton as representing the sister University of Oxford. He had noticed that the larvæ of *S. carpini*, if left in a box with dead food, and probably partially starved, made a light-coloured cocoon; but that when the cocoon was made under natural conditions, on living food-plants on the moors, it was of a dark colour. Mr. Poulton, Prof. Meldola, Mr. Bateson, and others continued the discussion.—H. Goss & W. W. FOWLER, Hon. Secs.

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[No. 182.

ON THE OCCURRENCE OF HYBRIDS BETWEEN THE RED GROUSE AND PTARMIGAN.

BY WALTER CHAMBERLAIN, F.Z.S.

HAS the Red Grouse, *Lagopus scoticus*, been known to interbreed with the Ptarmigan, *L. mutus*? This question is of some interest to grouse-shooters as well as to ornithologists, because it is not unfrequently asked on moors where the ranges of the two species overlap.

Probably not a few sportsmen and gamekeepers would promptly answer it in the affirmative, either as they thought of their own knowledge, or on the authority of others who believe they have seen or killed and handled such a hybrid. On the other hand, I do not think that any experienced ornithologist would be prepared to give such a statement an unqualified endorsement.

My attention was first directed to the subject in 1888. In August of that year, when shooting at Black Corries, as the guest of Mr. John Gilmour, I chanced to kill a very light-coloured young Grouse. This bird rose with two other young ones of the ordinary colour and the old hen; and as it flew we all thought for the moment it was either a Ptarmigan or a hybrid. On picking it up, however, notwithstanding its peculiar colouring, we readily agreed that it was only a variety of the Grouse. On dissection it proved, as I was subsequently informed by the taxidermist, to be a female with the ovaries apparently in a healthy condition.

At the time I was not able to say whether a hybrid of the Red Grouse and Ptarmigan had been known to occur, but considering the close relationship of the two species and that their ranges overlap one another in many parts of Scotland, as well as the thoroughly ascertained fact that other game-birds by no means so nearly akin do occasionally interbreed, the occurrence of such a hybrid seemed by no means unlikely.

On my return home, however, after consulting a large number of ornithological writers, including all our principal authorities, I was rather surprised to find that not a single instance of this particular hybrid was on record, though accounts of other hybrids were given in some numbers.* Of course such evidence is purely negative, and only shows that our authors had not met with a case which they considered sufficiently authenticated; at the same time it certainly seems to indicate that the hybrid, if it occurs at all, must be excessively rare, and that therefore the not unfrequent reports of its occurrence current amongst gamekeepers, or recorded in 'The Field,' must be received with the greatest caution.

Under these circumstances, although I may not be able to give a definite answer to the question with which I have commenced this paper, I think it may be of some interest to consider, firstly, some typical cases of such alleged hybrids from the columns of 'The Field' and elsewhere; and, secondly, to arrange the arguments, as they occur to me, for and against the probabilities of its occurrence. Some of these reputed occurrences rest only on the fact that one or more very white-looking birds have been seen amongst the red ones. Such cases are not worth discussing, for unless the exact position of the white and the colours of the darker feathers can be ascertained, the probabilities would be all in favour of albinism, which in a more or less complete form is not uncommon amongst Grouse and other animals. Besides, the eye is very apt to be deceived both as to the quantity and distribution of the white on a flying bird; for instance, whilst the light-coloured specimen which I shot at Black Corries was on the wing, we all of us thought it to be a nearly pure white bird, and were accordingly surprised to find when we

* Mr. Seebohm, in his 'British Birds,' speaking of the Red Grouse, says, "It has been known to interbreed with black game, and possibly with Ptarmigan"; but he does not adduce any instance.

picked it up that it really was more of a dirty slate and yellow tone, and I have more than once made the same remark on so-called "white" Pheasants.

Passing over the instances reported to have been seen only, I will consider some in which the bird has been secured and examined.

In August and September, 1888, no fewer than five cases were reported in 'The Field' of "white Grouse" or hybrids, and a sixth referred to by the Editor.

In one of these the writer expressly states that his bird was only a variety of the Red Grouse, as no Ptarmigan existed anywhere near, though but for this circumstance it would not unlikely have passed as a hybrid, since the wish is apt to be father to the thought, and the shooter would be inclined to believe that he possessed the more curious specimen.

In two other cases the writers seem to have satisfied themselves that their birds were also merely varieties, as they do not, and could not, by the description they give, claim them as hybrids.

The fourth, fifth, and sixth cases require more consideration.

The fourth example was shot out of a covey of six ordinary Grouse on Sir Donald Currie's Garth Moors. The writer, after roughly describing the coloration, adds, "At first sight one would imagine the bird to be a cross, if such a thing were possible, between a Grouse and a Ptarmigan." The description of the colour is as follows:—

"The back is nearly white, slightly speckled with light brown, with a small patch of dark grouse-feathers on either side close to the pinions of the wings; a couple of corresponding dark patches lie immediately below the wings on the body, while the breast is of a very light colour, in which light feathers predominate, with a dark line down the centre. The tail is white, shading off to a pale slate-colour at the tip, and the outer feathers of the wings are pure white, faintly tipped with grey. The feet are like those of other Grouse, but the pads are distinctly yellow, instead of the usual grey-green colour of the ordinary young birds on these moors."

Now it seems to me that this description affords tolerably conclusive evidence that this bird was only a whitish Grouse, and not a hybrid, since if it had been a hybrid the colours of the back would have approximated to those of the Ptarmigan in

summer or autumn; that is, it would have been slaty or ash-grey, largely vermiculated, and here and there blotched with black instead of white, which is the *winter* dress of the Ptarmigan; whilst the tail, instead of being "white shading off to a pale slate-colour at the tip," would have been blackish, with the tips more or less white; that is, almost exactly the reverse, if it is to be taken as evidence of interbreeding. This error of expecting a hybrid in early autumn plumage to approximate to the winter plumage of the Ptarmigan, is noticeable in most of the descriptions I have read of so-called hybrids, whereas an ordinary white variety might be expected to show white or absence of colour almost anywhere, irrespective of the seasonal dress or sex of its parents.

I may add that although in this and most other similar cases the fact that the bird was the only one of the covey so marked, if it does not make it certain that a cock Ptarmigan had not previously paired with a hen Grouse, it at least makes it highly improbable.

The fifth and sixth instances are the most probable of any I have come across, and I give the reference to these *verbatim*, the sixth being contained in the editorial note:—

"HYBRID PTARMIGAN AND RED GROUSE.—With reference to F. J. M.'s note in your last issue [the third on my list] on a curious variety of the Red Grouse, I may mention that in 1873 there was a covey of five birds on Ben Larven which were believed by the keepers to be hybrids between Red Grouse and Ptarmigan. Mr. Chalmers, who had rented the moor for some years, succeeded in shooting a brace in October, and submitted them to several ornithologists in Edinburgh, who all pronounced that the keepers were right. Ben Larven is within a few miles of Garth. [In 1878 a hybrid between Red Grouse and Ptarmigan was exhibited by Professor Newton at a meeting of the Zoological Society. It had been shot on the 1st Sept. in that year at Kintradwell, in Sutherland, and was forwarded to him by Capt. Houston, of Kintradwell.—ED.]"

Now the fact that the whole covey in this instance seems to have been peculiarly coloured, and that the two birds shot were submitted for examination to persons said to be ornithologists, undoubtedly makes it look like a genuine instance of hybridism, as I believe a whole brood of albinos must be extremely rare, if it ever occurs; but unfortunately, in the absence of any description of the birds shot, or any names of those who favoured the

the theory of hybridism, it is impossible to accept the statement alone as conclusive evidence.

I regret very much that I did not at the time endeavour to follow up this case; but as it was then already fifteen years old, and had not found its way into any standard work, it was probably open to serious criticism.

The sixth instance, referred to in the Editor's note, I must now discuss at some length, because on this, and this alone, so far as I have yet been able to ascertain, rests the case for the actual occurrence of a hybrid between the Red Grouse and Ptarmigan.

This bird, on my application, was very kindly forwarded to me by Prof. Newton for examination, and the following is my description:—

Size, that of young Grouse, or about the same as small Ptarmigan. Bill a trifle heavier than those of young Grouse. Legs and toes well feathered, more so than young Grouse in August; otherwise not different. Above: head, neck, back, wings, and tail-coverts, all as in early autumn plumage of Ptarmigan, but darker, with very narrow white and yellowish-tinged bars crossing the feathers universally; the body of all the feathers brownish black, the general effect distinctly more the greyish black of the Ptarmigan than the reddish yellow of the Grouse. Beneath: chin as in Ptarmigan, lighter and more whitish than in Grouse. Lower neck, breast, flanks, lower abdomen, and under tail-coverts, all rather more broadly barred with dirty white and yellow than upper parts, and yellowish black or brown the prevailing tone. Upper and middle abdomen broadly patched with white, intermixed with a few brown patches crossed with the usual yellowish bars. Under wing-coverts white. Primaries and secondaries brown outside, grey inside, tipped with white; primaries edged with white, which tapers off to the tips and becomes mixed with brown for the last two inches. There is distinctly more white edging to the primaries than in specimens of old hen Grouse, and in young Grouse the white edging seems wanting altogether. Tail, above and behind, brown as in old hen Grouse, with lighter (not white) tips, and yellowish bar just above the tip on most of the middle feathers. Sex and age not given, but apparently a bird of the year.

Museum labels:—"Shot at Kintradwell, 1st Sept. 1878. Shot

out of a covey of Grouse. William Houston." "*Lagopus*.—Hybrid variety (*L. scoticus*, *L. mutus*). P. Z. S., 1878, p. 793. Wm. Houston."

It will be noticed that this bird in its colours appears to be about as nearly half-way between a Red Grouse and a Ptarmigan in summer plumage as is possible, and on this account it differs widely from those more numerous instances in which the birds are reported as having white or light-coloured backs.

In his communication to the Zoological Society, Prof. Newton pointed out that it resembled a hen Ptarmigan in summer plumage above, but that its general appearance was much darker, whilst underneath it had a greater resemblance to the young of the Red Grouse, and that it was shot in the vicinity of a locality frequented by Ptarmigan; he added that he was not aware of any record of such a hybrid, though information received induced him to believe that other examples had before occurred.

In a letter to myself, Prof. Newton says, *inter alia*, "I can well conceive that in some cases it would be very difficult, if not impossible, to decide whether albinism or hybridism was the cause of departure from the normal plumage, and though I have never doubted that this particular example has been rightly assigned, I certainly do not mean to assert that my opinion could not be controverted."

Later on,—namely, in November, 1888,—on my returning the specimen, he wrote:—

"I have to thank you for returning the supposed hybrid Grouse's skin, and also with favouring me with your opinion of it, which I shall bear in mind. I confess, however, that I attach a great deal of importance to that of Captain Houston, from whom I received the specimen. He is an old—I might say very old—man, an accurate and thoughtful observer, and very conversant with Grouse and Ptarmigan. Indeed, it would not be easy to find a more practical man competent to give an opinion. All the same, looking to what I constantly lament, the ignorance under which we all suffer as regards hybrids, it seems to me that we should be very cautious in coming to any conclusion, and above all that we ought not to dogmatize on the subject. I think it would be hardly safe to say of birds, like those of the genus *Lagopus*, that one member of a brood might not have a different father from the rest.

"I fully admit that there are few birds more variable than the Red Grouse. The beautiful series of specimens collected by my friend Mr. T. E.

Buckley, and exhibited a few years ago to the Zoological Society (P. Z. S. 1882, p. 112), showed this in a way that wholly surpassed my expectations, though I believe that it was at my instigation that he began his collections; for I, with little or no experience of the fact, had surmised that a good deal of variability would be found. On the other hand, it is an equally curious fact that an extensive series of specimens obtained in Ireland by Mr. A. G. More showed scarcely any variation—all presented the same ‘snuff-coloured’ appearance which in Scotland is associated in gamekeepers’ minds with ‘grouse-disease,’ and not one had the brilliant and varied hues of the Sutherland birds.”

Now Prof. Newton is a high authority, and I should scarcely have felt justified in even discussing the claim of his specimen to be the veritable “Simon Pure” if he had not himself, as it were, expressly admitted that it was open to discussion.

The only points I can urge against hybridism and in favour of albinism in this case, are:—1stly. That the bird, as usual, seems to have been the only one of the covey that showed unusual variation, which, though perhaps not conclusive, is certainly very suggestive. 2ndly. The variations of Grouse, red, grey, slaty, ash, black, and white, are endless, and a combination of colours apparently very similar to those of the Kintradwell bird is already on record in Montagu’s ‘Ornithological Dictionary,’ where, in the Supplement to his article on “Red Grouse,” he says, “A mottled brown and white variety very much resembling the summer plumage of the Ptarmigan was shot in Lancashire in the month of August” (Lord Stanley). No doubt, if this specimen resembling a Ptarmigan had been shot in a locality frequented by the latter species, it would have been characterised as a hybrid. 3rdly. When even alleged examples of this cross are so excessively rare that none are recorded by ornithological writers, one naturally hesitates to accept a solitary specimen the verification of which rests mainly on so unsatisfactory a proof as colour. It must not be forgotten, moreover, that the ranges of various species, or so-called species, of Ptarmigan, such as *L. albus*, *L. mutus*, *L. rupestris*, &c., overlap one another elsewhere, especially in Norway and Sweden, whence come most of our records of Grouse hybrids, and that nevertheless we have not, so far as I am aware, a single record from that country, or elsewhere, of a cross, nor I think even an alleged cross,

between these species of Ptarmigan, which are all, be it noted, monogamous.

Further, the very close relationship which exists between the species, leaving practically nothing but colour and size by which they can be discriminated, makes it quite possible that any one of them should produce occasional varieties in plumage resembling another, from the tendency to revert to the ancestral form. We seem to have a good example of this in the "mottled brown and white variety very much resembling the summer plumage of the Ptarmigan" described by Lord Stanley, and recorded by Montagu as above noted.

On the whole, however, as Prof. Newton leaves no room to doubt that he himself believes the bird to be a hybrid, I confess that I am on that account, more than on its appearance, disposed to accept it as such, and if only the remainder of the brood had partaken, more or less, of its peculiarities, I think that the circumstantial evidence would then have amounted as nearly as possible to proof positive.

We have now considered individual cases, and ascertained that, however doubtful most of them may be, it is at least possible, and perhaps probable, that one or more of them are genuine examples of this rare cross.

It remains to enquire whether, on general grounds, such a hybrid might be expected to occur sometimes; if this be so, it strengthens by so much the probabilities of the more likely instances, otherwise it diminishes these probabilities to the same extent.

Now numerous and undoubted instances are on record of the occurrence of hybrids between other members of the Grouse family, as well as a few between them and gallinaceous birds. The following examples may all be accepted as established in the wild state, and I have myself seen specimens of each:—

(1) Capercaillie (*Tetrao urogallus*), female, and Blackcock (*T. tetrix*), male, both species polygamous; hybrids not uncommon. It seems doubtful if the counter-cross ever occurs. (2) Blackcock, male, and Pheasant (*Phasianus colchicus*), female; both species polygamous. (3) Blackcock and Willow Grouse of Norway and Sweden (*Lagopus albus*), not common; sexes of parents uncertain. (4) Blackcock and Red Grouse (*L. scoticus*), rare; sexes of parents uncertain.

One or two other crosses are alleged, and in addition both the

Capercaillie and Blackcock have mated with the common hen under semi-domestication. None of these hybrids are known to be fertile *inter se*, and it is very doubtful if any of them are fertile with the parent species.

But if species belonging to different genera, such as Blackcock (*Tetrao*) and Willow Grouse or Red Grouse (*Lagopus*) will cross, it may certainly be anticipated that the more nearly related members of the same genus, such as Red Grouse and Ptarmigan, will under suitable external conditions also produce hybrids.

All the members of the Grouse family are intimately related; so much so that a very competent ornithologist (Macgillivray, vol. i. p. 137), speaking of the British representatives of this group, says, "I have hesitated much to admit them as distinct genera"; that is, for example, he has hesitated to recognise a generic distinction between the Blackcock and Red Grouse or Ptarmigan. But if the differences between *Tetrao* and *Lagopus* (except as regards feathering and size) be small, the differences between the various species of *Lagopus* are still less. It has long been a matter of argument amongst ornithologists whether the Red Grouse should not rather be classed as an insular variety of the continental Willow Grouse (*L. albus*) under the name of *L. albus* var. *scoticus*, than as a distinct species; and after handling many skins of both forms and studying fully the arguments, I certainly hold that our Grouse is not entitled to specific rank. But the connection between the white Ptarmigan, *L. mutus*, and the Red Grouse is very nearly as close, and their common ancestors cannot be far to seek in time; the difference of food and surroundings amply accounts for the varying difference in size and colours of the two species: and I can scarcely doubt, after noting the numerous recorded facts showing the close correlation which exists between the size and colour in either species, and the ground which it inhabits, that if some Ptarmigan could be gradually introduced to lower ground, it would not be very many years before their progeny would become assimilated to the Red Grouse both in size and colour.

Taking, then, the known fact that other and less closely related species of Grouse do cross in nature, and remembering that the ranges of the Red Grouse and Ptarmigan overlap in many parts of Scotland, and that it is not unreasonable to suppose that, once in a way, a solitary cock of the one species may find

favour in the eyes of a widowed hen of the other, or may even fight for the hen with her legitimate spouse (I have seen a record of such a case in the columns of 'The Field'), it certainly seems by no means unlikely that a hybrid should now and again be produced.

Against this it may be urged that such crosses are repugnant to the instincts of the birds, and that although their instincts may occasionally be overcome in the case of polygamous birds, where often the young cocks are prevented from mating by older and stronger birds, they would operate with much more certainty amongst monogamous birds, and even to the extent of absolutely preventing such unions.

That this or some other cause does operate most powerfully, is, I think, sufficiently shown by the following suggestive comparisons:—

(1) Hybrids between Capercaillie and Blackcock, both being polygamous, not at all uncommon.

(2) Hybrids between Blackcock and Willow or Red Grouse one being polygamous and the other monogamous, decidedly uncommon.

(3) Hybrids between the various species of Ptarmigan, (*Lagopus*), all being monogamous, either unknown or excessively rare.

On the whole, however, the *a priori* arguments are decidedly in favour of the possibility, and even probability, of such a cross; and this conclusion lends additional weight to the claims of Prof. Newton's specimen to be what it certainly looks like—a genuine hybrid between the Red Grouse and Ptarmigan, or the Ptarmigan and Red Grouse.

To sum up; my consideration of the question at issue leads me to the following conclusions:—

(1) There is not in the Natural History Museum at South Kensington any example of such a hybrid, nor is there any record of one; nor, for that matter, of any hybrid at all between different species of Ptarmigan, in the works of any British ornithologist with which I am acquainted.

(2) The greater number of the alleged cases communicated to 'The Field,' or other periodicals, break down in the descriptions, and none that have come under my observation could be accepted by ornithologists without further verification.

(3) There is one specimen, having all the appearance of such a cross, in the Cambridge University Museum, and this specimen is believed by Prof. Newton to be a genuine example.

(4) The fact, however, that this bird was the only one in the covey so marked, together with the extreme variability of Red Grouse, the frequency among them of albinistic varieties, and their close relationship with the Ptarmigan (*L. mutus*) making it probable that they would throw back on a common ancestor, and the, in any case, extreme rarity of such a cross, all tend to cast doubt on the hybrid origin of the Kintradwell bird now preserved at Cambridge.

(5) There is no apparent reason why such a cross should not occur in nature; on the contrary, it is rather surprising that it has not occurred and been identified more than once.

My answer, then, to the question—Has the Red Grouse (*L. scoticus*) been known to interbreed with the Ptarmigan (*L. mutus*)?—is, that I know of no unimpeachable record of such a hybrid, and of only one probable example.

NOTES ON MARINE MOLLUSCA COLLECTED ON THE COASTS OF DONEGAL AND DUBLIN.

By H. CHICHESTER HART, F.L.S.

I VENTURE to offer the following list of Irish Mollusca, being the result of my collections along various beaches from the years 1881 to 1887. A little dredging and trawling experiences will be found interspersed. I am aware that gathering shells along the shore is not the most scientific method of studying Marine Conchology, nor is it even a useful plan for forming a collection, as the specimens are commonly unfit for the cabinet, though I have, of course, preserved what I gathered; but a valuable insight into the life of the adjoining sea is at any rate obtained in this way, and in a comparatively brief period of search. The dredge and the trawl will frequently descend and ascend without bringing up a single shell, but if the strand be properly selected a day's search may easily yield close on a hundred varieties, often battered, but almost always identifiable. Moreover, dredging is only rarely practicable on such stony coasts as those of Donegal, and always both expensive and troublesome. I feel therefore that

my Donegal notes may perhaps not require an apology. Mr. R. Lloyd Praeger, in his paper on "The Marine Shells of the North of Ireland" (Belfast Naturalists' Field Club, Feb. 1889), remarks:—"I find no record whatever of any dredging in Lough Foyle. From the extensive coast line of County Donegal . . . comes hardly a single note to enrich the list which follows." This being so, I feel the more inclined to publish these notes, if only to remove such a reproach.

I have walked along the whole coast of this county. Owing to its usually precipitous and oceanic character, the great bulk of it yields no hunting-grounds of this sort. Indeed the upper reaches of Lough Swilly are, so far as I have observed, far the best part of the coast. Usually the shells along shore [are pulverized out of shape before being deposited, and often miles of strand may be walked without yielding a recognisable fragment, except perhaps of *Pecten* or *Donax*.

The northernmost point of Donegal appears to oppose a barrier to a few species which are common as far as Lough Foyle, and become suddenly rare in Lough Swilly, such as *Cyprina islandica*, *Turritella terebra*, and *Aporrhais pes-pellicani*. The latter instance is not, however, so marked. *Cyprina* is an interesting case, as it is a northern form, and it would appear as if the colder water in the channel suited it better than the Atlantic. The same remark would apply to *Fusus gracilis*, which does not, however, reach so far up as Lough Foyle from the east coast. The distribution of *Cerithium reticulatum*, as contrasted in Dublin and Donegal, is also remarkable.

With regard to my Dublin localities there is less of interest. The British Association Report of 1878 includes a full list of Dublin shells; but I am not aware that a list has since been published, and it is certain that several rare species formerly obtainable on the best strand in Ireland, that of Portmarnock, are now very seldom to be met with there; so that a record may prove of value to future observers. The depreciation in the Portmarnock fauna arises, I believe, from the mud deposits forming outside. I may mention that I have searched Portmarnock repeatedly, at various seasons, year after year, and have also had access to several collections made there formerly, and I believe it will not be easy to add many to those now recorded, which are, however, fewer than those that have been stated to occur there.

CLASS CONCHIFERA.—ORDER LAMELLIBRANCHIATA.

Anomia ephippium, Linnæus.—Dublin: frequent, Howth, Portmarnock, &c. Donegal: abundant on the upper parts of Lough Swilly, as at Fahan and Inch; frequent westward in the county.

A. patelliformis, Linn.—Dublin: Portrane and Portmarnock. Donegal: Lough Swilly, with the last.

Ostræa edulis, Linn.—Dublin: Malahide, Clontarf, and Howth. Donegal: Lough Swilly, at Inch and Castlewray.

Pecten pusio, Linn.—Dublin, frequent; I have gathered living specimens after heavy storms at Portmarnock. Donegal, frequent round the coasts.

P. varius, Linn.—Dublin, Donegal, frequent.

P. opercularis, Linn.—Dublin, Donegal, common.

P. tigrinus, Müll.—Dublin: I have dredged valves of this dead, at Ireland's Eye; on the beach at Portmarnock near the Point; formerly found there double (Miss Willan). Derry: Miss Galway has gathered single valves at Magilligan.

P. septemradiatus (*P. danica*, Müll.).—Derry: Magilligan, a single valve (Miss Galway).

P. maximus, Linn.—Dublin and Donegal, common; rarely occurs as a drift shell. Off the coast of Down many are trawled.

Lima hians, Gmelin.—Donegal: plentiful at Moross Ferry, Mulroy, especially on the "Between-water" side, where I have gathered specimens, in 1888, at low-water beside the boat-slip. I have taken it also on the Fanet side of the ferry. The bottom is weedy, with much *Zostera*, and the tide of the lough, owing to the narrow entrance, is very slight.

Pinna rudis, Linn.—Wexford, Tuscar Rocks. I have obtained specimens (some of them very fine) from the Dublin Bay trawlers. They were obtained from the Tuscar Rock, and also from off the coast of Down.

Mytilus edulis, Linn.—Common on all coasts.

M. modiolus, Linn.—Dublin and Donegal, common.

M. adriaticus, Lamarek.—Dublin: Portrane, scarce. Donegal: Kinnegar strand, near Rathmullan, on Lough Swilly, rare.

Modiolaria (*Crenella*) *marmorata*, Forbes.—Dublin, a few specimens amongst shingle at the "Ware Hole," Drumleck, Howth; Portmarnock, scarce. Wexford: common on the shores

of the Harbour. This species must have a southern tendency, as I could never find a fragment of it on any Donegal shore.

Nucula nucleus, Linn.—Donegal and elsewhere, common.

N. nitida, G. B. Sowerby.—Dublin, frequent at Portmarnock, where I have taken it alive at the lowest tides.

Pectunculus glycymeris, Linn.—Derry and Donegal; coasts of Lough Foyle, old valves; Galway Bay.

Arca tetragona, Poli.—Derry, Magilligan, old valves (Miss Galway).

Lasea (Kellia) rubra, Montagu.—Donegal: Mweelfinn, Sheephaven, Dunfanaghy, Carrablagh, Lough Swilly.

Lucina borealis, Linn.—Donegal: Kinnegar and McCamish, near Rathmullan on Lough Swilly. Derry: Macgilligan. Dublin Bay, frequent; I have taken it alive on the South Bull after a storm; also on Ventry Strand in Kerry.

Axinus flexuosus, Montagu.—Dublin and Donegal coasts, frequent.

Diplodonta rotundata, Brown.—I have received specimens from Galway Bay.

Cardium echinatum, Linn.—Abundant on the Dublin shores, and often found alive on the South Bull and Portmarnock after a storm. Not uncommon on Lough Swilly, but rarely cast up alive.

C. exiguum, Linn.—Dublin: I have gathered a single dead specimen at Portmarnock. Donegal, rare; dead valves were found very sparingly by me at a little bay, Mweelfinn, near Breaghy Head, Sheephaven.

C. fasciatum, Montagu.—Not unfrequent on the shores of Donegal and Dublin; more so on the latter.

C. edule, Linn.—Common on all sandy coasts at low water.

C. norvegicum, Spengler.—Dublin, frequent; live specimens cast up after storms at Portmarnock. Donegal, occasionally on most shores, as near Buncrana and in Donegal Bay.

Isocardia cor, Linn.—I have received fine specimens of this shell from the Dublin Bay trawlers in the live state. They were chiefly taken off Dunmore, Co. Waterford; but one of the largest specimens existing perhaps was taken with others off Carlingford. Subsequently, on board one of the trawlers, we picked up dead valves off Carlingford, Co. Down.

Cyprina islandica, Linn.—Dublin, very abundant, and often occurring alive on various shores after a gale. Donegal, rare;

I gathered it in a subfossil state near Melmore Head, Mulroy, and also a valve, much worn, in the tide. In Donegal Bay I have gathered a single valve. This species occurs along the east coast, and is very common so far to the north as Magilligan, Co. Derry. Once, however, the Foyle channel is crossed, it apparently diminishes exceedingly in its numbers.

Astarte sulcata, Da Costa.—Dublin: single valves occur occasionally at Howth, Portrane, and Portmarnock, and I have once, in spring, picked up a fresh specimen in the latter place. I have never found any evidence of this species inhabiting the Donegal coasts.

Venus exoleta, Linn.—Dublin: South Bull and Portmarnock, common. After a heavy gale, about ten years ago, I found numbers alive at the inner end of Portmarnock strand. Derry: fresh specimens at Magilligan. In Galway Bay this species appears to be common.

V. lincta, Pulteney.—Dublin, frequent on the strands, often quite fresh; southward I have gathered this shell on Ventry strand, Kerry. Derry: Magilligan, but scarce.

V. fasciata, Da Costa.—Dublin: Portrane, Howth, South Bull, but not frequent on the shell-beaches. At Portmarnock I have taken fresh specimens.

V. ovata, Pennant.—Dublin, a single valve at the "Ware Hole," near Drumleck, Howth.

V. gallina, Linn.—Dublin and Donegal, common, and often thrown up alive.

Tapes aureus, Gmel.—Donegal: Kinnegar strand, near Rathmullan, and Inch Island, both in Lough Swilly. Mweelfinn, Sheephaven, not common, but perfectly fresh specimens occur. I have found this also on Ventry strand in Kerry.

T. virgineus, Linn.—Dublin: South Bull and Portmarnock strands. Donegal: I have seen a single specimen with Mr. Batt, of Rathmullan, which was obtained in Lough Swilly.

T. pullastra, Montagu.—Dublin, common on all the coasts. Donegal: White strand, Buncrana, Sheephaven, &c., common.

T. decussatus, Linn.—Dublin: South Bull, and Velvet strand, Portmarnock. Donegal: Kinnegar strand, Lough Swilly, and elsewhere; Inch Island.

Lucinopsis undata, Penn.—Dublin coasts, frequent. Donegal: White strand, near Buncrana, and Kinnegar, near Rathmullan,

Lough Swilly. I have gathered it also westwards in the county, often fresh, and do not think it rare.

Tellina balthica, Linn. (*T. solidula*).—Dublin and Donegal, common on muddy sand.

T. tenuis, Da Costa.—Dublin and Donegal, common on sand.

T. squalida, Pulteney (*T. incarnata*).—Dublin and Donegal, frequent; often found quite fresh on sandy beaches of Lough Swilly and elsewhere.

T. donacina, Linn.—Dublin: I gathered fresh specimens after a storm, in 1881, at Portmarnock. Several fine examples were shown to me in Miss Willan's collection from the same locality. Like several other interesting shells that used to be found on this strand, the present species is now almost unknown. A growth of glar, or ooze, appears to have stretched along the coast outside, to the destruction of several clean-feeding animals.

(To be continued.)

ORNITHOLOGICAL NOTES FROM NORFOLK.

By J. H. GURNEY, F.Z.S.

THE following diary of ornithological events in Norfolk, for the year 1891, comprises all that is likely to be considered of more than local interest:—

The frost, which had lasted for eight weeks, broke up on Jan. 23rd, there having been only three nights in fifty-one days on which it did not freeze. The memorable frost of 1860-1, though more severe, did not last so long, being over in thirty-six days. At that time the late Mr. Stevenson communicated an account of the effect of the severe weather in Norfolk upon birds, to the pages of 'The Zoologist' (1861, p. 7389). Amongst other things he noted the absence of Waxwings, and the abundance of Smews and Wild Swans, characteristics which have marked the winter of 1890-91. Then, as now, all birds suffered. According to the testimony of our meteorologists (*cf.* Trans. Norf. and Norw. Nat. Soc. v. 191) the cold was greater in 1860-61 than in 1890-91; but it was not the cold, but the starvation produced by it, which tamed the Wild Ducks, killed the Redwings and Fieldfares, and drove the hungry Brent Geese into our harbours.

The winter of 1890-91, like that of 1860-61, brought to the coast of Norfolk many Whoopers and some Bewick's Swans. Twenty Swans, mostly Whoopers, were shot, at or in the vicinity of Cley, and the Yarmouth district produced as many more; besides which, others were shot at Lynn and Wells.

On Jan. 10th Colonel Feilden saw a Whooper flying, almost in the town of Wells, not higher than the gas-lamps. It rose into the air with a fine trumpeting note, and he was so near that he could plainly discern the bright yellow colour at the base of the bill, the bird being not more than thirty yards distant from him.

On Jan. 3rd Mr. Smith, the taxidermist at Great Yarmouth, wrote that in Yarmouth roadstead there were hundreds and thousands of wildfowl, their numbers at sea off Scratby extending more than a mile along the coast. It is thirty winters, I believe, since Wigeon were so abundant. The gunners computed that at Cley and Blakeney about 3000 Wild Ducks, of different species, had been shot by the time the frost broke up, including Golden-eyes, Pochards, Shelducks and Goosanders. One punt, owned by a man named Long, got fifty-four ducks in Cley Harbour in one day.

Other birds besides wildfowl had a hard time of it. On Jan. 5th eighty Wood Pigeons were caught at one pull of a net, at Hempstead, where the keeper had taken eighty-three only ten days before. During snow and sharp weather is the time to get Wood Pigeons; they are then enticed into an open shed with a wire top, and the fatal net is let down in front when the man in concealment deems that there are enough inside.

Of late years the Red-breasted Merganser, *Mergus serrator*, has been quite a rarity. On Jan. 6th, 1891, a female of this species was shot at Cley; and on the same day a Fork-tailed Petrel, *Thalassidroma Leachii*, was procured at Yarmouth.

On or about Jan. 9th three Red-necked Grebes, *Podiceps rubricollis*, were shot at Yarmouth, and about the same time a migration of these birds was observed in Yorkshire, and was recorded by Mr. Nelson (Zool. 1891, p. 253).

On Jan. 10th an adult male Smew, *Mergus albellus*, was shot on the River Waveney, at Wortwell, and taken to Mr. Candler, at Yarmouth, for preservation. About the same time, or shortly before, four more of these birds were obtained at Yarmouth by

Mr. Sharman; and a little later—namely, on Jan. 17th—a pair were shot by Mr. Harmer on Breydon: the female had quite a crest and very black cheeks; the ovary was well developed, and the stomach contained remains of small Smelts.

On Jan. 19th a Lapland Bunting was netted at Yarmouth, and a female Bustard, *Otis tarda*, driven apparently from the Continent by hard weather, was found dead at Stiffkey, after having been previously shot at and wounded (*cf.* Zool. 1891, pp. 102, 103).

A starved Heron, which I had noticed as being very weak, was picked up dead at Keswick on Jan. 21st. Several others were reported to have been starved, but one which I examined at a birdstuffer's was pretty plump.

On Jan. 24th a fine old male Smew was shot at Aylsham, and sent me in the flesh; the gizzard contained remains of fish. Two days later another of these birds, also an adult male, for which I am indebted to Mr. Candler, was shot at Wortwell, near Harleston. It contained a partially digested frog. Another, shot at Rockland a week or two previously, contained an eel, which Mr. Roberts, who stuffed it, says was $11\frac{1}{2}$ inches long: it was in the act of eating it when shot, and must have been hard up to attempt such a lengthy morsel. Another, stuffed by Mr. Cole, contained some small roach, bitten about the head. I never remember the appearance of so many Smews in Norfolk, and, from the communications of other correspondents, it appears that several have been met with in other parts of England. They are voracious birds, as shown by the varied contents of the stomachs in those examined.

Before leaving the *Anatidæ* I would allude to a Teal, *Querquedula crecca*, having a white collar, though not a complete one. It was shot on Jan. 10th, at Saxmundham, and Mr. H. A. Macpherson, who has alluded to this variety in the 'Birds of Devonshire' (p. 102), writes that he has since bought another specimen similarly marked.

The long and dreary winter at length came to an end, and on the 11th of April returning spring manifested itself. On that date a forward young Wood Pigeon, *Columba palumbus*, had already left its nest, and was sitting on an adjacent branch.

On Whit Monday seven fresh eggs of the Greater Spotted Woodpecker, *D. major*, were taken at Hempstead. A few days

later Colonel Butler heard the flute-like notes of the Golden Oriole at Herringfleet, and I found a contented Redstart sitting on eggs at Northrepps, where to my knowledge a Redstart has never been found nesting before.

On May 21st a male Scops Owl, *Scops giu* (Scopoli), was shot at Walsingham Abbey, as recorded by Col. Feilden (Zool. 1891, p. 315), and was sent by him to Norwich, where I had an opportunity of seeing it and examining its gizzard, which contained some insect remains, and what appeared to be filaments of moss. On June 1st another Scops Owl, a male, was killed in a market-garden at Martham. Its gizzard contained beetles of a bronze colour. These two Scops Owls may be regarded as the rarest birds met with in Norfolk during the year.

On June 15th, as Mr. Patterson reported, three Avocets and two Spoonbills were seen on Breydon Water. Two Puffins and a Razorbill were washed up on the beach at Yarmouth on June 24th, and taken to Mr. Patterson, and two more Puffins were sent about the same time to Mr. Gunn, from Lynn.

Sandwich Terns, Manx Shearwaters, Grey Phalaropes, Fieldfares and Rough-legged Buzzards successively passed Norfolk on the autumn migration, and almost simultaneously 'The Field' announced their appearance on other parts of our Eastern seaboard. The Phalaropes, however, were South-of-England visitants, and Norfolk lay too far to the north and west to attract them in any number. Four, however, were shot on Oct. 20th, 22nd, 24th, and 25th, the only one which occurred inland being obtained at Wymondham. This remarkable incursion of Phalaropes has been more extensive than that which attracted so much attention in 1866.

The flight of Rough-legged Buzzards alluded to by the Editor (p. 22) set in, on our coast, about the 10th of November last, on which day one was shot at Hempstead; but Suffolk was equally visited by these birds. Although several were sent to our birdstuffers, it was not such a memorable visitation as that which occurred in 1880.

House Martins were still numerous in November, and a few Swallows, and were noticed in various places up to the 22nd. Owing to the combative propensity of the Sparrow, the House Martin is becoming quite a rare bird with us, and their appearance so late in the season attracted general notice. Sand Martins

were seen by Col. Feilden on Nov. 18th. This unusual lateness in the stay of the *Hirundines* was observed on the coast of Kent and in other places.

A Sandwich Tern was shot at Cley, by Mr. Gunn, on August 10th; and three more were obtained by Mr. Pashley in the course of the subsequent fortnight, one of which was immature; a fifth was obtained at Yarmouth by Mr. Lowne. On Aug. 21st a Spoonbill, *Platalea leucorodia*, was shot at Cley; and on Aug. 25th I received a Ruff, *Machetes pugnax*, from the same place, and on the 27th four young Greenshanks. Mr. Cordeaux wrote that higher up the coast Greenshanks were quite numerous. A very young Red-necked Grebe was shot at Cley on Sept. 1st, and on the 3rd an Eared Grebe was killed at Kessingland: on examination it proved to be an adult bird, retaining a little of its summer plumage.

On Sept. 5th a Broad-billed Sandpiper, *Tringa platyrhyncha*, was shot on a meadow adjoining Breydon, as recorded by Mr. Southwell (Zool. 1891, p. 396). Having been fired at first with No. 4 shot, and afterwards with No. 6, and then carried about for some hours in a coat-pocket, it was unfortunately almost spoilt.

No bird is more senselessly persecuted than the Barn Owl. On Sept. 6 a birdstuffer in Norwich stated that he had no less than forty of these birds brought to him in the previous seven weeks.* On Sept. 7th a Manx Shearwater, *Puffinus anglorum*, occurred at Creake.

A pair of Sandwich Terns, *Sterna cantiaca*, were seen off Lowestoft, about a mile from the shore, on Sept. 15th, together with a Skua (no doubt Richardson's) and a good many Razorbills. Prof. Newton, in the 'Birds of Norfolk,' (iii. p. 267) alludes to Razorbills sometimes submerging themselves gradually when pursued, before the final dive; but the Razorbills observed at Lowestoft went down without any such preparation, none at least that my eye could detect. Another Manx Shearwater, *Puffinus anglorum*, was shot at Breydon Water, and the following day two were procured at Cley. All three proved to be males.

* Such wanton destruction calls for the strongest remonstrance. Perhaps if the Norfolk and Norwich Naturalists' Society were to draw up a circular on the subject of the thoughtless persecution of certain well-known British birds, and cause copies to be distributed amongst those who seem to stand in need of instruction, it might in time be productive of good results.—Ed.

On Oct. 2nd an ash tree was struck by lightning at Thompson, beneath which a full-grown chicken was feeding. The bird was not killed, but all the feathers were stripped off one side of it by the electric fluid, and a straight line made down one leg, as though it had been scratched. It nevertheless recovered, and lived to be fatted and killed in the ordinary way.

Two white House Martins were observed on the lighthouse hills at Cromer on Oct. 6th, and about the same time ‘The Field’ mentioned others in Yorkshire. The cliffs of the hills referred to are the annual resort of Martins at the time of their autumnal gatherings.

On Oct. 12th an Avocet, *Recurvirostra avocetta*, was shot at Stiffkey. On the 18th a great number of Rooks were observed by Mr. Patterson to come in from the sea at Yarmouth.

Two Grey Shrikes were shot at Cley by the Rev. J. R. Ashworth on Oct. 27th, and on Nov. 1st flocks of Greenfinches were reported from Yarmouth by Mr. Patterson.

The washed-up remains of several Fieldfares, which had perished in trying to cross the sea, were picked up at Yarmouth on Nov. 8th by Mr. Patterson, and about the same date thousands of these birds were observed on the low lands at Acle and Brundall.

“VERMIN” PAID FOR BY CHURCHWARDENS IN A
BUCKINGHAMSHIRE PARISH.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

IF not too long, the following summary of “vermin,” whose deaths were paid for by the churchwardens of one parish in this county, may be of interest. The parish is Hambleton, chiefly celebrated at the present moment as the last resting place of the late Rt. Hon. W. H. Smith, and as the parish from which his widow has chosen her title.

The southern boundary of the county of Bucks is formed throughout by the Thames; Hambleton is the most westerly parish along the base of the county, except Fawley, which separates it from Oxfordshire. Directly out of the river valley, the whole parish is of an undulating and even hilly character, and covered to a great extent with beech woods. Langley, whose ‘History of the Hundred of Desborough’ (in which the parish is situated)

was published in 1797, says:—"The parish is in length five miles, and four in breadth, and contains about 7000 acres of land, of which 5500 are arable and pasture, 1200 woodland, and 150 common or waste. There are 30 farms, 154 cottages, and about 970 inhabitants." Lipscomb, whose history of the county was published fifty years later (1847), copies this account, and the only more recent account that I know of is Sheahan's 'History and Topography of Bucks,' published 1862, wherein the area is given as 6615 acres, including 1400 acres of woodland. The population in 1881 was 1502.

These accounts are more precise than those of most parishes which I have examined, in giving the numbers of each species paid for. In some cases the numbers are not given, and I have inferred them from the price paid; these are all marked thus *.

The churchwardens' year never reckons from Jan. to Jan.; usually March to March, occasionally May to May, &c.; but I have endeavoured, for the sake of uniformity, to apportion the kills to the Gregorian (Jan.—Dec.) way of reckoning, and if the result is not in all cases quite correct, it at least does not affect the averages.

Most parishes are less explicit in their statements; for instance, at Medmenham, a parish which divides Hambleden along the greater part of its eastern edge from Great Marlow, the entries are in this form:—

1775 pd. J. Johnson a bill for Rining, Sparrows, Badgers,	} 0 16 10½†
polecats, &c.	

The partial summarising of these accounts, as I have done, instead of recording each kill of one, two, &c., specimens singly, with the various eccentricities of spelling,—“heg-hog” or “hedg hog,” “poullcatt” or “pole Catt,” &c.,—takes away from their original charm, but at the same time renders them, by concentration, a little more readable.

It is not impossible that there may still be a Badger or two lingering in the parish, in spite of gamekeepers. One was captured there about three years ago, which I am afraid was kept for baiting for some time in Marlow, and was then sent to a well-known place of entertainment near London, for the same cruel and illegal purpose.

† Johnson was the Sexton, and sent in his bill for certain “Bell Ringing Days” and “Vermin,” all mixed up.

I have never heard of a Polecat in the parish within my recollection; but in October last a man out rabbiting in the above-mentioned parish of Medmenham shot at, and probably fatally wounded, one. It was not obtained; but I believe the account was reliable, and that it was in all probability a Polecat, and not merely an escaped Ferret. Polecats are great wanderers, and as there are still a few left in various parts of the county, there would be nothing very extraordinary in a straggler finding its way to that spot.

EXTRACTS FROM THE CHURCHWARDENS' ACCOUNTS OF THE PARISH OF
HAMBLEDEN, BUCKINGHAMSHIRE.

- | | |
|---|---|
| <p>1639. Fox 2.*
 1641. Fox 2. No more detailed accounts until 1710, and no more Foxes until—
 1716. Fox 9.*
 1717. Fox 3,*
 1718. Fox 3.
 1719. Fox 1, Hedgehog 1.
 1720. Fox 4,* Hedgehog 1.
 1721. Fox 1.
 1722. Polecat 1.
 1723. Fox 1.
 1725. Fox 2.
 1727. Fox 5.
 1730. Hedgehog 29, Polecat 2.
 1731. Hedgehog 12, Polecat 8.
 1732. Hedgehog 7, Polecat 3.
 1733. Fox 4, Hedgehog 2, Polecat 1.
 1734. Polecat 3.
 1735. Polecat 5.
 1736. Fox 3.
 1737. Hedgehog 6, Polecat 1, Badger 1. (In March, 3s. was paid “for shooting Jackdaws about ye Church.”)
 1738. Hedgehog 6, Polecat 1, Badger 7.
 1739. Polecat 9. (Some of these belong to the following spring. In April 4s. was paid “for Shooting the Jack-daws.”)
 1740. Fox 2, Hedgehog 3, Polecat 7,* Badger 3.
 1741. Fox 5, Hedgecat 2, Badger 2.
 1742. Fox 3, Polecat 5.
 1743. Fox 7, Polecat 4.
 1744. Fox 2, Hedgehog 3, Badger 1.
 1745. Fox 6, Polecat 2.
 1746. Badger 4. “May ye 7th Pd. for ye Act Concerning ye Cows 0. 1. 6.”</p> | <p>1747. Hedgehog 1, Polecat 5. “May ye 15th. pd. Mr. Fairfax ye Rigestor bill paper for ye Cows Court,” &c. (To what do these entries refer?)
 1748. Hedgehog 1, Polecat 3.
 1749. Hedgehog 2, Polecat 3.
 1750. Polecat 1, Badger 2.
 1751. Fox 7, Hedgehog 4, Polecat 7, Badger 7. [ger 9.
 1752. Hedgehog 3, Polecat 7, Badger 2.
 1753. Hedgehog 3, Polecat 6, Badger 1.
 1754. No account: the parish clerk “died by haven the Small Pox and the account (of the churchwarden) was not found any more”!
 1755. Hedgehog 5, Polecat 8, Badger 5. [ger 5.
 1756. Hedgehog 12, Polecat 5, Badger 2.
 1757. Hedgehog 6, Polecat 2, Badger 3.
 1758. Hedgehog 32, Polecat 2.
 1759. Hedgehog 12, Polecat 3.
 1760. Hedgehog 5, Polecat 4, Badger 1. [ger 4.
 1761. Hedgehog 7, Polecat 7, Badger 2.
 1762. Hedgehog 15, Polecat 7, Badger 2. [ger 2.
 1763. Hedgehog 19, Polecat 7, Badger 2.
 1764. Hedgehog 24, Polecat 7, Badger 6. [ger 18
 1765. Hedgehog 17, Polecat 9, Badger 3.
 1766. Polecat 8, Badger 3.
 1767. Hedgehog 2, Polecat 9, Badger 1.
 1768. Hedgehog 1, Polecat 10, Badger 2.
 1769. Fox 1, Hedgehog 2, Polecat 12, Badger 2.</p> |
|---|---|

1770. Hedgehog 4, Polecat 13, Badger 2.	1793. Fox 1, Hedgehog 53, Sparrow 778.
1771. Hedgehog 2, Polecat 8, Badger 8, Weasel 2, Hawk 1.	1794 { Fox 1, Hedgehog 70, Sparrow
1772. Polecat 1, Badger 6, Stoat, 1.	1795 } 621.
1773. Hedgehog 1, Polecat 3.	1796. Fox 1, Hedgehog 63, Polecat 2, Sparrow 199.
1774. Hedgehog 32, Polecat 8, Badger 2.	1797. Hedgehog 67, Polecat 3, Sparrow 363.
1775. Hedgehog 22, Polecat 11, Badger 13.	1798. Fox 1, Hedgehog 85, Polecat 1, Sparrow 474.
1776. Hedgehog 22, Polecat 9, Badger 13.	1799. "Pd for Vermin—£2,, 12,, 1¼" (this was above the average expenditure).
1777. Hedgehog 21, Polecat 21, Badger 1, Weasel 5: "a Bill for Vermin—0. 5. 4."	1800. Hedgehog 7, Polecat 1, Sparrow 1104.
1778. Hedgehog 33, Polecat 15, Badger 5, Weasel 1. "Bill for Vermin—0. 5. 4."	1801. Sparrow 348.
1779. Hedgehog 23, Polecat 8, Badger 7.	1802. Hedgehog 37, Sparrow 2208.
1780. Hedgehog 16, Polecat 4, Badger 4.	1803. Hedgehog 70, Sparrow 2232.
1781. Hedgehog 9, Polecat 6.	1804. Sparrow 180.
1782. Hedgehog 4, Polecat 1, Badger 2, Stoat 1.	1805. Sparrow 696.
1783. Hedgehog 14, Polecat 2, Badger 2, Stoat 1.	1807. Sparrow 628.
1784. Polecat 10,* Badger 2.	1808. Polecat 1, Sparrow 242.
1785. Fox 5, Hedgehog 14, Polecat 1, Badger 1.	1810. Sparrow 384.
1786. Hedgehog 23, Polecat 4.	1811. ,, 504.*
1787. Hedgehog 30, Polecat 9, Sparrow 1012.	1812. ,, 696.*
1788. Hedgehog 34, Sparrow 514.	1813. ,, 144.
1789. Fox 1, Hedgehog 34, Sparrow 556.	1814. ,, 180.*
1790 { (May to May). Hedgehog 40,	1815. ,, 300.*
1792 { Polecat 1, Hawk (all specified as Sparrowhawks) 8,	1817. ,, 234.
Sparrow 280.	1820. ,, 192.
1792. Fox 1, Hedgehog 88, Polecat 1, Sparrow 828.	1822. ,, 2142.
	1823. ,, 300.
	1824. ,, 462.
	1826. ,, 1848.
	1828. ,, 2338.
	1829. ,, 2376.
	1830. ,, 960.
	1831. ,, 1124.
	1832. ,, 836.

SUMMARY.

Fox	in 83 years (1716—1798)	Total	84	Average	1.
Hedgehog	85 ,, (1719—1803)	1161	,	13¼.	
Polecat	87 ,, (1722—1808)	330	,	3¼.	
Badger	49 ,, (1737—1785)	155	,	3¼.	
Weasel	8 ,, (1771—1778)	8.			
Stoat	12 ,, (1772—1783)	3.			
Hawk	22 ,, (1771—1792)	9.			
Sparrow	46 ,, (1787—1832)	28,283	,	614¼	

NOTES ON BIRDS SEEN IN SWITZERLAND.

By O. V. APLIN

(Member of the British Ornithologists' Union).

(Concluded from p. 14.)

Lanius collurio, Red-backed Shrike.—Apparently common in the valleys. I saw the following:—one at Sonceboz (2150 ft.), in the Jura; one near Interlaken; one at Meiringen (all three adult males); a pair, one odd male and two odd females, between Grafenort and Stanz, chiefly near Wolfenschiessen, and a male at Stansstad. The bird at Interlaken was in the flat ground west of the lake of Brienz, and frequented some patches of a species of bush unknown to me, thorny with narrow, hoary, almost mealy leaves. It was doubtless feeding on cockchafers, which swarmed (indeed the Höheweg was strewn with crushed bodies), but it was unnecessary to impale any, as the bushes were liberally garnished with them naturally.

Muscicapa grisola, Spotted Flycatcher.—Common at Bern and abundant at Thun; also seen at Interlaken, but *not* at Meiringen, and we did not see it again until we reached the valley of Stanz. It was abundant in the gardens and orchards about Stansstad.

M. atricapilla, Pied Flycatcher.—One at Bern in the trees below the Rathhaus. At Interlaken a pair were feeding young in a hole in a great branch of a walnut tree in a little open space adjoining the Höheweg; they fetched the insects from an orchard where haymaking was in progress, perching on the young fruit trees and dropping on the insects in the grass. Like all the birds in Interlaken, they were wonderfully tame, and kept coming to the nest just over our heads as we smoked our pipes sitting on the low, flat-topped wall. Also saw a male (singing) on hazel-clothed slope by the Reichenbach; a male about the cherry trees among the châlets of a village above the Alpbach; a male in the woods near Hohfluh (3400 ft.); the females of these were probably sitting; when descending to Engelberg F. saw one just as we crossed the stream, and we met with another male in a pear orchard at Stansstad.

Hirundo rustica, Swallow.—Not numerous anywhere. Seen at Bern, but not many; Interlaken, a few. Saw several nests in Meiringen built under the broad eaves, and looking casually like

Martin's nests, but always open at the top and placed, in some cases, against a beam for extra side support. Some on little ledges provided for them. We saw birds on the nests and others going on, so there was no mistake. I saw one bird on the telegraph-wires, with peculiarly white under parts, pure white. A few at Engelberg (but none higher), and about Stansstad. I believe this nesting habit of the Swallow is not at all uncommon in some parts of the Continent.

Chelidon urbica, House Martin.—Much more abundant than the Swallow. Breeding on the Station buildings at Delémont. At Bern not numerous (Bern is given over to Swifts). At Interlaken we observed the nests with a view to seeing if any were built on the wooden houses the walls of which were not plastered. We saw several on those which were, and two at least on those which were not. At first we failed to see any birds over Meiringen, but I noticed some on the 20th June, and two days after we found two nests under eaves of wooden-walled and -roofed châlets. Anderegg was much surprised when we pointed them out (we saw the birds go on and off), having never known a nest in the village before; but I saw marks plainly of one or two last year's nests which had been knocked down. Anderegg says that they breed in rows on the cliffs at the back of the village, and it is almost certain that the House Martin, which is known by a name meaning "rock builder," has only taken to breeding on the houses here quite recently. Many at Engelberg. Very common at Stansstad, where I counted seven nests under the eaves of one wooden gable end.

Cotile riparia, Sand Martin.—Saw one over the Aare at Bienne, near where Mr. Howard Saunders says that they breed ('Ibis,' 1891, p. 169). The Crag Martin breeds near Meiringen, but we had not time to visit the place.

Certhia familiaris, Tree Creeper.—In the gardens of the Hôtel Bellevue at Thun.

Tichodroma muraria, Wall Creeper.—We never succeeded in detecting one, though we searched an enormous extent of rock-face; but the bird is small and its hunting grounds unlimited. I mention it here because Anderegg said it bred this year in the Aareschlucht. This is unusually low down, but he thought that the bird was attracted by the cool air in the gorge. Stauffer, of Lucerne, who had a nice group of them, said rightly that the

black throat was assumed in summer; yet a fledged brood in the nest (which had the red on the wings well developed), in the Bern Museum, are attended by a pair of birds neither of which has any black on the throat; but the latter may not be the actual parents.

Carduelis elegans, Goldfinch.—A common bird in the valleys, Several pairs of large beautifully bright birds, with white cheeks, about the chestnuts in the Münster Terrasse at Bern. This terrace is a favourite place for birds of several species, and nesting-boxes have been put up by an Ornithological Society. Many pairs about the Hôtel Bellevue grounds at Thun. A good many among the fruit trees at Meiringen, and abundant in the orchards about Stanz.

Serinus hortulanus, Serin Finch.—A pair frequenting the trees in the hotel garden at Thun, where the curious sibilant song of the male could be heard—the latter a beautifully bright bird, with forehead and lines on the face very yellow, flew down and settled on the ground within three or four yards of where I was standing. One clutch of eggs in the Bern Museum are marked with large patches of reddish suffusion, similar to that seen in those of the Chaffinch.

Chrysomitris citrinella, Citril Finch.—A fine male was singing on the roof-ridge of a hay châlet on the Gerschni Alp. He afterwards settled on a big rock, and gave me an extended view at close quarters before he flew off towards the pines. The most conspicuous features of the cock Citril Finch are the comparatively long bill, grey cheeks, and the yellow and almost black bars on the wings. The song was very curious, rather grating, something linnetish about it, and yet different to anything I had heard before, and I could not put it down on paper satisfactorily.

Passer domesticus, House Sparrow.—It was a pleasure to find oneself in a district where the Sparrow was scarce. There were a few at Thun and Interlaken, more in Bern, of course, and some about the pier at Stansstad. A pair were nesting, with characteristic impudence, in a hole in the rock in the middle of the inscription on the Lion monument at Lucerne, an untidy bit of nesting material hiding some of the letters.

Fringilla cœlebs, Chaffinch.—A common bird, with a considerable range in altitude. Common and in song at Bern, Thun, Interlaken, and Meiringen. At the last named it sung its ordinary

song, but at Thun and Interlaken it almost constantly used the Wood Wren-like prelude (which I have heard in some parts of England also). At Thun the strain was peculiarly full, loud, and rich (18th June). In the pines near the Mägis Alp (4000—5000 ft.) we heard it, and on the Engstlen Alp, also daily in the scattered pines at the edge. One remarkably fine male, which was singing on a pine standing below me on a slope, was the brightest I ever saw. Colours decidedly pale and very bright. Breast lovely pink, with more of this tint and less of the salmon-colour than our bird has. Still in full song at Stansstad on the 28th.

Linota linaria, Mealy Redpoll.—Mr. Howard Saunders doubts if the Mealy Redpoll reaches below 58° N. latitude, and says, “for the bird found breeding in the mountain regions of Central Europe is, probably, our Lesser Redpoll” (Ill. Manual of Brit. Birds). I think this statement should be modified. It is true that Mr. Fowler procured a Redpoll on the Engstlen as long ago as 30th June, 1884, which there can be little doubt, from his description, was a Lesser Redpoll, and this form seems to have been found in other mountain localities in Central Europe; but the Mealy Redpoll also breeds there, and is probably at all events the prevalent species. Mr. Saunders refers to “the fact that Mr. S. B. Wilson found it [*L. rufescens*] nesting on the Engstlen Alp (6100 ft.), and in other parts of Switzerland.” I do not know if Mr. Wilson has the specimens now, but I find that, in his paper in ‘The Ibis’ (1887, pp. 130—150) he merely includes the six specimens he shot on the Engstlen under the name *L. rufescens*, remarking that only one had a red breast; and he does not refer to *L. linaria*. The Redpolls in the Bern Museum are labelled *rufescens*, except one which bears the name *alnorum*, but they are all pale birds. I can only say that the three pairs I saw on the Engstlen Alp, and one pair on the Gerschni Alp (sitting on the ridge of a hay châlet, to which they doubtless came to feed on the shed grass seeds), were all Mealy Redpolls, and very well marked examples of the species too. I spent some time in examining them, often at very close quarters, through strong glasses. They were large birds, the males very mealy above, very light-coloured underneath, almost white, with a lovely rose-coloured breast; females darker on the back. The song of these birds struck me as different from that of the Lesser Redpoll; I noted it down as “zig-wig-chutta chutta chutta che we we.” They sang this strain from the top of

a cedar or a stump, and even a big rock, but the male loves to sing a short song while wheeling round high in the air. Before I found out this habit I was quite at a loss to know where the sound came from. The Lesser Redpoll will sing when flying from one tree-top to another, slanting down with expanded wings, but the Mealy Redpolls remained flying round and round high up for many consecutive minutes. This short song is "chicki chicki chicki wee wee"; an enlargement of the double call-note, "chicki-chi," in fact. Again, to my ears, this call-note seemed to differ from that of our bird in tone.

Montifringilla nivalis, Snow Finch.—Observed a party of five on a stony slope at top of the Joch Pass, when we were resting there on the 25th June, being unable to get down the other side on account of the depth of the snow, which was softened by the blazing hot sun. One or two (? females) were very like Snow Buntings in general appearance; but the slate-grey head, throat-spot, and dark mantle are conspicuous in the old male. The long, pointed black and white wings are very remarkable when the birds fly.

Pyrrhula europæa, Bullfinch. — Only observed once—*viz.* in the beech wood on the N.W. side of the Brünig Pass.

Loxia curvirostra, Crossbill.—Two flew overhead in the pines below the Mägis Alp, uttering their "psit psit psit"; another very green bird seen there also. F. saw one with something in its beak on the Engstlen, and Anderegg saw five in the pines at the lower end of this alp.

Emberiza citrinella, Yellow Bunting.—Observed at Interlaken, where we found a nest of young near the top of a clipped spruce fence about three feet high, and common in the hay-fields in the valley of the Engelberger Aa. It seems fonder of gardens in Switzerland than here, and is absurdly tame; a Yellow Bunting fed its full-fledged young one, quite in Interlaken, within a few yards of us, and another strong young one had to be beaten out of a shrub in the hotel garden at Engelberg before we could identify it—at one yard's distance.

E. cia, Meadow Bunting.—We did not identify this species, but saw, and heard the note of, a bird which Anderegg declared was it, and he was doubtless right. This was at Im-Hof, a known locality for it.

Sturnus vulgaris, Starling.—Some young broods, flocked, in

the valley between Bienne and Bern, but not seen again until we reached Stansstad, where one was feeding in an orchard.

Pyrrhocorax alpinus, Alpine Chough.—Seen on the Joch Pass from about half way up the west side; a flock of fifty or sixty near the top. When wheeling almost like Kestrels in the air their tails are spread, somewhat fan-shaped, a little rounded; wings with widely separated primaries, more rounded than one would expect, and the feathers bent back at the tips. They often sail on motionless wings, and are no less pretty in the sunshine as they run actively over the grassy slopes, poking their shining yellow bills under the stones, doubtless in search of beetles. They seemed fond of feeding along the edge of the wasting snow-fields, as the Rooks feed along the edge of a flooded meadow with us. Two mobbed a Kestrel which appeared on the scene. Perhaps their commonest note is a short “kray, kray,” but I heard, too, a short, sharp, rapid “kurray” or “krray” and also a little scream-like “creek.” These notes are, of course, the result of only a short study of the Alpine Chough, but they were put down on the spot with the birds all round me.

Nucifraga caryocatactes, Nutcracker.—Observed in the pines below the Magis Alp. Near Hohfluh, a bird which had been calling in the pines on a cliff near, flew overhead, and gave us an opportunity of observing its most peculiar flight, which is weak and jerky, with intermittent and irregular wing-beats; it is an awkward-looking bird, with its heavy head and body, and short tail. On two mornings on the Engstlen Alp, as I was dressing, I heard the “krää krää krää” or “kraay kraay kraay” of the Nutcracker, and on one occasion made out the bird on its favourite perch, on the top of a pine; on the other he was shrouded in drifting mist. There is a white variety in the Bern Museum.

Garrulus glandarius, Jay.—Observed in the deciduous trees about the Alpbach, and as high as nearly 4000 ft., where a stream was bordered with low trees and bushes.

Pica rustica, Magpie.—Only seen once, viz. at Golderen, where one flew up out of an orchard at the back of one of the châteaux.

Corvus corone, Carrion Crow.—Common in the valleys; at Thun, Meiringen, where they would sit in a fruit tree and croak within a dozen yards of one, and Stansstad. A young brood

following the old birds at Thun. They did not come up to the Alpbach, but we found them at Engelberg; birds seem to have a higher range on this side of the Joch Pass than the other.

C. corax, Raven.—Heard on the snowy mountains on the south side of the Engstlen See; one seen a little way up the Joch Pass, and a pair at the top.

Alauda arvensis, Sky Lark.—Only seen near Bienne.

Cypselus apus, Swift.—There must be something about Bern which is very attractive to Swifts. They swarm in the town, and their screaming is heard all day as they dash about the wide streets under the eaves of the houses. The upper part of the town stands 100 ft. above the Aare, and possibly its position (1760 ft.) may be the reason why the Swifts keep down to the level of the house-roofs to a large extent. But the Swift flies high. They used to scream round the Alpbach, and many were about the face of a cliff high above the hotel; above Golderen, too (3500 ft.), I saw them. No Swallows or Martins appeared in these places. There were many at Engelberg, and some at Stansstad. The screaming of the hotel colony as they dashed round and round over the garden will always be associated in my mind with a rosy sunset on the snow peaks of the Oberland as a chief remembrance of Bern; while now and then could be seen high up above them the sailing flight of their great Alpine relations whose scream came down faintly.

C. melba, Alpine Swift.—As many as forty or fifty in the air at once round the Cathedral at Bern. Some went in under the eaves of the red roof, and others lower down, so they do not seem to be disturbed by the scaffolding of the workmen. The Alpine Swifts flap their wings less frequently and seem to go slower than the common species; but this is because they fly less hurriedly, and really they go at wonderful pace. They almost always seem to fly very high, and on one blazing hot day their white underparts could be seen at a great height in the violet-blue sky. We saw some come slanting down to sport over the river for a minute or two and to dip in it; as they dipped they raised their long wings over their backs. Standing on the Münster Terrasse on these occasions, one had an opportunity of noting the colour of their backs, which is very like that of the Sand Martin's. The Alpine Swift often utters a short, sharp note, "cheef," but the

scream is long and rather chattering, "ski-ki-ki-i-i-i." The nests in the Museum contained many scraps of newspaper.

Dendrocopus major, Spotted Woodpecker.—In the deciduous woods near Hohfluh we saw an adult female come twice to a tree in which was a nesting-hole, and I could hear the "gik gik" of another bird, probably the male, not far off. In a tree near were two more Woodpeckers' holes. Curiously enough, in the next tree was a male Pied Flycatcher.

D. minor, Barred Woodpecker.—Mr. Fowler saw one near the Reichenbach Hotel, Meiringen, with a very bright crown.

Picus martius, Great Black Woodpecker.—Anderegg called our attention to the note of this species at the top of the Brünig, but we could not see it.

Gecinus canus, Grey-headed Woodpecker.—I heard the "ha ha ha" of a Woodpecker, lower in tone and less resonant than that of the Green Woodpecker, just above the Alpbach, and in the fir and pines higher up. We met with an undoubted example on a wooded hillside, with fine, scattered trees, between the Brünig and Hohfluh. Looks small on the wing, and very grey-looking on the upper parts; no red visible on the head when it flew past below me, as would have been in the case of *G. viridis*. Greenish yellow rump conspicuous. Doubtless breeding in the immediate vicinity, as I saw it several times, getting pretty close to it, and it flew within a few yards of F. The "ha ha ha" was low and deep, not nearly so highly pitched as that of *viridis*, and wanting the ringing quality.

Cuculus canorus, Cuckoo.—Heard in full song at Interlaken, above the Alpbach (two at once), near Hohfluh (two at the same time), and as late as the 23rd near Im-Hof.

Circus cineraceus, Montagu's Harrier.—Just after leaving the Obere Hasli-thal at Im-Hof, we saw a slender hawk, with long tail and long narrow wings, soaring at a considerable height, and apparently taking insects, as it constantly executed some quick and sudden turns and twists in the air; during these manœuvres its tail was repeatedly opened and closed. After watching it for some time against the sky, I at last got it against the dark pines, and could see the colours very well in the bright sun. It seemed to be of a dark, blackish brown, with a rufous-brown tail, through which the sunlight showed when it was spread.

Buteo vulgaris, Buzzard.—Watched one sailing round and

round about a rocky cliff-face among the pines near Hohfluh for a long time, until it settled on a pine. For full five minutes it circled without a single wing-flap. A rather dark bird, with the light pattern on the under side of the wings very much marked.

Accipiter nisus, Sparrowhawk.—One seen at Golderen; another on the Engstlen Alp was seen twice, on one occasion as it was mobbed by Missel Thrushes when flying over the lake; also at Stansstad.

Falco tinnunculus, Kestrel.—A pair feeding their chattering young on rocky cliffs at Meiringen. Seen twice half way up west side of the Joch Pass, and about the precipitous sides of the valley at Stansstad.

Columba palumbus, Ring Dove.—A pair at Meiringen.

Turtur communis, Turtle Dove.—A pair seen near Langnau. There is a specimen in the Bern Museum from the same locality.

Perdix cinerea, Partridge.—One seen between Bern and Bienne.

NOTES AND QUERIES.

Threatened spoliation of the New Forest.—Naturalists will be concerned to hear of the proposed curtailment of their happy hunting grounds in the New Forest, and the destruction of about 800 acres there by the contemplated formation by the Government of a military rifle range and permanent camp. As this proposed enclosure, under the Ranges Act of 1891, is in direct contravention of the New Forest Act of 1877, we are not surprised to hear that there is considerable opposition to it. A new Bill has been introduced (the New Forest Bill, 1892) by way of limitation to the powers proposed to be exercised by the War Department, and we trust it may have the desired effect. Petitions are being signed in opposition to the scheme of encroachment and spoliation, and we are indebted to Mr. Herbert Goss, whose name is well known to entomologists, for the following statement of facts, which we feel sure will be perused with interest:—

“In connection with the petitions in favour of the New Forest Bill, 1892, to which the signatures of persons interested in the New Forest are being obtained, I am frequently asked, ‘What is the necessity for the Bill, and what is its object?’ The facts of the case may be shortly stated as follows:—The ‘Woods and Wastes’ of the Forest comprise about 63,000 acres of land, the whole of which were prior to 1698 open and unenclosed;

but under the authority of the Acts 9 and 10 William III. c. 36 (1698) and 48 George III. c. 72 (1808), the Crown was empowered to enclose, and keep enclosed, freed and discharged from all rights of Common, such quantity of land in the Forest as would amount to 6000 acres for the growth of timber. By the Act of 14 and 15 Vict. c. 76 (the Deer Removal Act of 1851) the Crown was authorised to enclose and plant with trees any quantity of land not exceeding 10,000 acres, in addition to the 6000 acres already in enclosure under the authority of the Acts before mentioned. The powers conferred by these Acts are not repealed by 40 and 41 Vict. c. 121 (the 'New Forest Act, 1877'); but the rights of enclosure are by sec. 5 of the last-cited Act limited to 'such lands as are at the date of the passing of this Act enclosed, or as have, previously to such date, been enclosed by virtue of commissions issued in pursuance of the said Acts or some of them.' The New Forest Act of 1877 practically secured the New Forest to the public, but the Act is virtually repealed by the 10th section of the Ranges Act, 1891 (and other Acts therein referred to), under the authority of which the War Department, with the consent of the Commissioners of Woods and Forests, can take possession of any part of the Forest for military purposes, and exclude the public from the enjoyment of any tract so taken. Already it is proposed to take 800 acres for a Rifle Range and the site of a Camp, and there is nothing to prevent the exercise of such rights throughout the district, and the conversion of the Forest into a second Aldershot. Wherever a portion of the Forest is taken, the rights of the commoners, if they complain, will be bought up and extinguished; and thus by taking different areas at different times the Commissioners may, before very long, extinguish the common rights and reduce the Forest into private ownership. It is clear that the proposed enclosure of 800 acres and the user of the Forest generally in the way described is in direct violation of the spirit and intention, as well as of the express provisions, of the New Forest Act of 1877. The object, therefore, of the New Forest Bill is to make it clear that the Forest shall not be deemed to be within the provisions of the 10th section of the Ranges Act, 1891, and that the provisions of the New Forest Act, 1877, shall remain in force. The rights secured by the Act of 1877, and the preservation of the Forest as an open space, are of the greatest importance to naturalists, artists, and the general public, and every possible effort should be made to secure the passing of the Bill by signing petitions in support of it."—H. Goss (Surbiton).

MAMMALIA.

Polecat in Merionethshire.—Although, owing to the nature of the country, the total extirpation of the Polecat in Merionethshire will probably not be accomplished for many years, it may be of use to preserve the following records of destruction. During the severe weather of 1890–91 a

keeper in my own immediate neighbourhood trapped three of these animals, one of which I saw. A park keeper on the same beat told me the other day that since his arrival (in the spring of 1891) he had killed five or six Polecats. All three were caught within a radius of about a mile, and some still remain on the same ground. I saw their tracks during the late snow-storm (Jan. 8th). In July, 1889, I saw in a fishmonger's shop at Dolgelly a large bundle of Polecats' skins said to have been procured in that neighbourhood, where, however, I was told that they were much less common than formerly.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

Mus alexandrinus in Ireland.—As this rat, which is now regarded, I believe, as a tropical or subtropical form of the Black Rat, *Mus rattus*, appears not to have been recorded as occurring in Ireland, it may be well to note that there are in the Belfast Museum two rats, labelled *Mus alexandrinus*, and described as having been caught in 1856 at Belfast, in a corn ship from Alexandria. They were presented by Lord Carlingford in 1887. One of these specimens is so dark that it is probably only a faded example of *M. rattus*. The other is undoubtedly a true specimen of *M. alexandrinus*, and is accordingly of some interest, as it appears to be the only Irish specimen in existence.—G. E. H. BARRETT-HAMILTON.

CETACEA.

Lesser Rorqual in Kerry.—A specimen of the Lesser Rorqual, *Balanoptera rostrata* (Fabr.), was stranded near Waterville, Co. Kerry, in October last. Although reported, in 'Land and Water,' as a Greenland Right Whale, there is no doubt that it was a Lesser Rorqual—a species said to be of not unfrequent occurrence on the Irish coast. According to Mr. H. C. Simpson, at the Waterville Coastguard Station, who has kindly sent me a piece of the baleen, its total length was 28 ft. 3 in.; girth, 18 ft. 9 in.; width of tail from tip to tip of each fluke, about 3 ft. 6 in.; length of fin on back, 10 in.; length of flippers, about 2 ft. It was of a very dark dirty brown colour above and dirty white below. The baleen forwarded is yellowish white. Mr. Simpson writes that two other Whales were stranded within a quarter of a mile of the place where the Lesser Rorqual came ashore, but no authentic records of them have been obtained.—G. E. H. BARRETT-HAMILTON.

BIRDS.

The Osprey in Lakeland.—I have been much entertained by the naiveness with which my friend Mr. A. G. More has laid down the law as to the large raptorial birds which once bred in Lakeland. He had previously acquainted me with his intention of writing on the subject; but he really must not expect us to accept as tenable the solution of the problems at issue, which he propounds with the happiest indifference to all local conditions of life. If Dr. Heysham possessed an Eagle taken in Ulleswater, he

would certainly not have said that it was taken near Keswick, because the old doctor used his words carefully, and did not say one thing when he meant another. I have notes of more than twenty-four of the Eagles, old and young, that were killed in the neighbourhood of Keswick within the last century; and if Mr. More had waited until the appearance of the forthcoming volume on the Vertebrate Fauna of Lakeland, he would not only have been spared the trouble of writing an unnecessary article, but would have found when my notes on the Osprey in Lakeland appeared that I thrashed out the whole story with Prof. Newton, whose kindness I gladly acknowledge here.—H. A. MACPHERSON (Carlisle).

Spotted Eagle in Essex.—I do not observe in the January number of 'The Zoologist' any reference to a second specimen of the Spotted Eagle, *Aquila navia*, recently procured in this county. It was shot at Leigh, near Southend, by the Rev. R. Stuart King, on Nov. 3rd, less than a week after the capture of the Elmstead specimen which is now in the collection of the Hon. W. Rothschild. According to information communicated to the 'Essex Naturalist,' the bird had been seen about the locality two or three days before it was shot. It was first seen on the ground in the Rectory meadow. Upon being alarmed by a boy, it flew up and settled on a tree. The lad fetched Mr. King, who, recognizing it as an Eagle, procured a gun and shot it. I examined it whilst it was in the hands of the birdstuffer, and agree with Mr. King in regarding it as a young bird. Though Mr. King says it "was evidently weak from want of food and was very light," its plumage was in excellent condition and the spots showed very plainly. Mr. King gives the length as $24\frac{1}{2}$ inches, and the expanse as 5 feet. The wing I found to measure 19 inches.—MILLER CHRISTY (Pryors Broomfield, Chelmsford).

Pallas's Grey Shrike in Notts and Leicestershire.—A specimen of this variety of the Great Grey Shrike was shot at Chilwell, near Beeston, during the first week in January, and may be seen at Stanley's shop, one of our local birdstuffers. Mr. Browne, in his 'Vertebrate Fauna of Leicestershire,' alludes to a specimen of this bird as having been locally obtained. Another was shot by Mr. W. T. Tucker, near Loughborough, on the 11th of January last. In the same work Mr. Browne states that he has no definite record of the occurrence of the Herring Gull in Leicestershire. Apart from its annual appearance in the Trent Valley, I can record a pair as passing over the town of Loughborough on the 19th September last. They were flying very low down, and were easily identified. On the same day I saw a Common Tern flying over the River Soar.—F. B. WHITLOCK (Beeston, Notts).

Parrot Crossbill in Ireland.—In 1889 I recorded the first known Irish example of the Parrot Crossbill, as having been obtained, in January

of that year, in Lord Rosse's demesne near Parsonstown, in King's County (Zool. 1889, p. 181). Mr. E. Williams has since obtained many specimens from different parts of the country (Zool. 1891. p. 112); and now again, in January, I have just examined and identified two well-marked examples, a male and a female,—measuring fully seven inches in length, and with bills half an inch in depth,—which were shot on the 8th of this month near Mageny, in Kildare, by Mr. Herbert Richardson, and have been by him presented to the Science and Art Museum, Dublin.—A. G. MORE.

[We may remind our readers that the large stout-billed race formerly distinguished as the Parrot Crossbill, *Loxia pityopsitacus*, is now generally regarded by ornithologists as merely one of several forms which are not entitled to specific rank. See Mr. Saunders' 'Manual of British Birds,' p. 194. We take it, however, from the above remarks, that Mr. More dissents from this view.—ED.]

Greenland Falcon in Achill.—On November 23rd last Mr. Jeremiah Trant, lightkeeper on Blackrock, Mayo, saw a "white Hawk, something larger than the game Hawk"; it was perched on the rock, and when it started it flew away towards Achill Head. On Dec. 12th Mr. Edward Williams, of Dublin, received a male Greenland Falcon in the flesh, from Achill, probably the same bird.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

Inherited Bird-Song.—I should like to thank Mr. Butler, in these pages, for his useful notes (p. 30) upon the songs of birds reared in captivity. It is obvious that some cries, such as those of the cygnet, duckling, and pheasant or partridge chick, are acquired by heredity; and it is interesting to find that in some species (*e.g.* Linnet) this principle is supplanted by mimicry. The whole matter is most curious, and is not without scientific value. It is to be regretted that naturalists generally confine their observations especially to the compilation of records of local distribution, without studying closely the manners of animals. Movement, and particularly when aberrant, not only indicates the mental qualities of animals,—it is also the parent of habit, and is the ancestor of physical character. I particularly desire information as to the cries of foster-nestlings, of any species.—CHARLES A. WITCHELL (The Acre, Stroud).

FISHES.

Æquoreal Pipe-fish at Waterville, Co. Kerry.—A fish kindly forwarded to me by Mr. H. C. Simpson, of Waterville, Co. Kerry, has been identified by Dr. Scharff, Keeper of the Dublin Natural History Museum, as the Æquoreal Pipe-fish, *Nerophis æquoreus*. It was picked up on the beach at Waterville, early in December, 1891, and is now in the Museum

of Science and Art, Dublin, where are also specimens from Portrush and Dingle. This species is said to be occasionally taken on all sides of Ireland. Thompson (Nat. Hist. Ireland, vol. iv. pp. 240, 241) records its occurrence on the corn coasts of Counties Cork, Antrim, Down, Galway, and Dublin. Waterville, therefore, would appear to be a new locality for this species.—
G. E. H. BARRETT-HAMILTON.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 17, 1891.—Prof. STEWART, President, in the chair.

Sir Walter Sendall, K.C.M.G., was admitted, and Mr. L. Rodway was elected a Fellow of the Society.

Mr. G. C. Druce exhibited specimens of *Sagina maritima*, Don MS. var. *alpina*, Syme, gathered on steep rocky places on the Cairngorms, and of *Illecebrum verticillatum*, Linn., found near Wellington College, Berks.

Dr. R. C. A. Prior exhibited some fruits of the Baobab (*Adansonia*), and an undetermined species of palm, which had been sent from Matabele Land as good to eat, under the misleading names of "cream of tartar fruit" and "wild orange." He read an extract from Oates's 'Matabele Land,' describing the natural growth and appearance of the Baobab as observed in that country.

The Hon. W. B. Espeut exhibited some nests of Humming-birds from Jamaica, and pointed out the variety of materials used by the same species, though placed in the same tree (a mangrove), the coloration in some cases being protective, in others not.

A paper was then read on the occurrence of two species of Crustacea belonging to the suborder *Cumacea* in New Zealand, whence none had been previously described. The author gave the result of his dredging in the Bay of Islands in the north, and in the inlets of Stewart Island in the south, and furnished drawings and descriptions of the species referred to.

A paper on the development of the head of the imago of Chironomus, by Prof. L. C. Miall and A. R. Hammond, was read by Mr. Hammond, accompanied by a series of illustrations with the oxyhydrogen lantern. The subject was introduced by a brief sketch of the life-history of the insect in its three stages, followed by detailed descriptions of the head both of the larva and of the imago. The history of the epidermic invaginations by which the imaginal head is formed within the larval head and prothorax was then followed out to its consummation in the development of the fly. The lantern arrangements were successfully carried out by Mr. Frederick Enock.

ZOOLOGICAL SOCIETY OF LONDON.

Jan. 5, 1892.—Prof. A. NEWTON, F.R.S., Vice-President, in the chair.

The Secretary made a report on the additions that had been made to the Society's Menagerie during November and December, 1891. Amongst these, attention was called to four Spotted-billed Pelicans, *Pelecanus manillensis*, received from Calcutta, and to a second specimen of the Formosan Fruit Bat—a species originally described from an example received alive by the Society in 1873.

Dr. E. C. Stirling exhibited some specimens of the new Australian Marsupial, *Notoryctes typhlops*, and gave a short account of the habits of this remarkable animal, as observed in a specimen recently kept in captivity by one of his correspondents.

An extract was read from a letter received from Dr. F. A. Jentink, calling attention to the recent acquisition by one of his correspondents in Java of additional specimens of the rare Bush Rat, *Pithechir melanurus*.

Mr. Ernst Hartert exhibited a series of eggs of the Common and other Cuckoos, mostly collected by himself and reliable friends, and made remarks on the question of the similarity of the eggs of the Cuckoos to those of the owners of the nest in which they are deposited.

A communication was read from Dr. J. Anderson, containing notes on a small collection of Mammals, Reptiles, and Batrachians made during a recent visit to Algeria and Tunisia.

Mr. F. E. Beddard read a paper upon the Earthworms collected by Dr. Anderson during the same expedition. Amongst them were examples of a new species of the genus *Microscolex*. A second new species of the same genus, based on examples collected by Mr. E. B. Poulton in Madeira, and proposed to be called *M. poultoni*, was also described.

A communication was read from Mr. R. I. Pocock on some Myriopoda and Arachnida collected by Dr. Anderson during the same expedition.

Mr. M. F. Woodward read a paper on the milk dentition of *Procavia (Hyrax) capensis*. The author showed that Lataste's canine has a counterpart in the lower or mandibular series, and described for the first time two small vestigial upper incisors. He concluded that the teeth named belong collectively to the first or milk set, and that the formulation of the incisors of this genus as $\frac{2}{1}$ is probably due to the occasional persistence of the second upper milk-incisor.

Mr. Oldfield Thomas gave an account of the species of the Hyracoidea, of which order he had lately examined a large series of specimens. The author recognised fourteen species of this group of Mammals, all of which he proposed to refer to one genus (*Procavia*). Besides these, four geographical subspecies were recognised. A new species was described as *P. latastei* from Senegal.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Jan. 27, 1892.—59th Annual Meeting (adjourned from the 20th inst. on account of the death of H.R.H. the Duke of Clarence and Avondale).—
—Mr. F. DU CANE GODMAN, F.R.S., President, in the chair.

An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892:—President, Mr. Frederick DuCane Godman, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G. Barrett, Mr. Herbert Druce, F.L.S., Captain Henry J. Elwes, F.L.S., Prof. Raphael Meldola, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Lord Walsingham, Captain Elwes, and Dr. Sharp, Vice-Presidents for the Session 1892–3. The President then delivered an Address. After alluding to the vast number of species of insects and to the recent calculations of Dr. Sharp and Lord Walsingham as to the probable number of them as yet undescribed, he referred to the difficulty experienced in preparing a monograph of the fauna of even a comparatively small part of the world,—*e. g.* Mexico and Central America, and certain small islands in the West Indian Archipelago,—upon which he, with a large number of competent assistants, had been engaged for many years. The examination of the collections recently made in St. Vincent, alone, had obliged him to search the whole of Europe and North America for specialists; and similar collections from Grenada were still untouched in consequence of the number of workers being unequal to the demands upon their time. He observed that the extent of the subject of Entomology was so vast, that nothing but a systematic and continuous effort to amass collections, work them out, and preserve them, could place us in a position to proceed safely with the larger questions which followed the initial step of naming species; and it would only be by the steady effort of our Museum officials, not only to work at the subject themselves, but to enlist the aid of every available outside worker, that substantial progress could be made. The President concluded by referring to the losses by death during the year of several Fellows of the Society, and other Entomologists, special mention being made of Mons. Edmond André, the Duke of Devonshire, Mr. F. Grut, Mr. E. W. Janson, Prof. Felipe Poey, Sir William Macleay, Mr. W. H. Edwards, Mr. Robert Gillo, and Dr. J. M. J. Af Tengström. A vote of thanks to the President and other Officers of the Society having been passed, Mr. Godman, Mr. McLachlan, Mr. H. Goss, and Mr. Champion replied, and the proceedings terminated.—H. Goss, *Hon. Secretary.*

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A NATURALIST'S RAMBLE IN SWEDISH LAPLAND.

By SUTTON A. DAVIES.

STARTING from Mo, on the Ranen Fjord, a little town some forty miles south of Bodö, in Norway, lat. 66°, on Aug. 14th, 1891, we crossed the mountains by an easy pass, and found ourselves that same evening at the upper end of one of the great Swedish chains of lakes. Next morning, Aug. 15th, we started early, and rowed down this lake, the Ovre Vmand, and at about 8.30 a.m. we were in Swedish waters, the boundary between the two countries being defined by a clearing in the birch-clad slopes that skirted the lake. In places the water was dotted with countless islands, between which there was a considerable current, the Vmea Elv being a river of fair size. Here we observed a good many Redshanks, *Totanus calidris*, a few Greenshanks, *T. glottis*, some Sandpipers, *T. hypoleucus*, and Divers (*Colymbus* sp.), which we saw both flying overhead and paddling about in little parties amongst the islands. A long row brought us at midday to a house, whence we were to cross over country to another chain of lakes. Here we saw a smoke-begrimed stuffed Tern hanging suspended from the ceiling. On our way across the mountains we observed a few broods of "Ryper," or Willow Grouse, Wheatears, and one or two dead Lemmings, although no traces of live ones.

After a night's rest, somewhat disturbed by mosquitoes, in a Lapp "hjorte," or conical hut, made of birch-bark and boughs, we found ourselves, on Aug. 16th, on the shores of a large birch-fringed lake. The Lapps were away fishing in the only boat,

but our Swedish guides, after a long search, discovered the party, and we crossed the lake for another tramp. During this walk we saw a good many "Ryper," a flock of Redpolls (*Linota*), and a few Teal on the mountain swamps. Four Buzzards were seen in all; I believe that the Rough-legged Buzzard, *Buteo lagopus*, is the commonest Scandinavian bird of prey. But night surprised us when some six miles from our stopping-place, and we were in the midst of a thick, tangled willow swamp, wet through with crossing the river which ran through it, one of the tributaries of the Vindel Elv, and with no boat to take us down it. So we made our way up into the birch above, and having kindled a roaring fire, we camped out for the night.

Aug. 17th. A thick hoar-frost had fallen during the night, but it soon melted, and our men having found the boat, which they missed the night before, we proceeded down the river, which for a northern stream has here an extremely flat and sinuous course between high banks fringed with dense willow scrub. Here we passed a good many Teal and Wigeon, including a few "flappers" that sought refuge under the banks. Presently we entered a small lake which seemed a paradise for ducks, so many did we see. Within the twenty-five minutes which we took to cross this lake, whose weedy bottom seemed a good feeding place for trout, we saw perhaps fifty ducks, mostly Wigeon, Teal, and Wild Duck, though perhaps there were other species among them. Several Sandpipers were running along the shores, and a Snipe was seen. Passing down a few runs of broken water, we reached a larger lake, where we saw more ducks, amongst which we distinguished some Goldeneyes. We saw one or two Buzzards, and a bird on the water, which, from its size, was probably a Goose of some kind. We arrived in the evening at a settlement of Swedish Bonders, which boasted a chapel; here I saw two Divers flying high in the air and uttering their harsh cry, "kakera," which is said to predict rain.

Aug. 18th. We were now in the zone of firs, and, as the Red-throated Divers predicted, the rain fell. The mosquitoes were very troublesome. Several Divers (*Lomme*) and Wigeon were seen; but fishing, and not travelling, was the order of the day. Sandpipers and a Kestrel were the only other birds seen, and I did not observe any Fieldfares, which hitherto were seen daily. House Martins build here in great numbers, as the Swedish

houses have convenient eaves for their nesting. In an uninhabited country like this, where the Lapp "hjorte" affords no accommodation to the birds, they must necessarily be very crowded for nesting room.

Aug. 19th. We proceeded on our journey down the Vindel Elv, shooting several rapids and carrying over others. Birds seen on the way were a great many Wigeon and Teal, Sandpipers, a Ring Ouzel, a pair of Tufted Ducks, a Greenshank, a Buzzard, and high up above the rapids, where at mid-day we stopped to fish, an Eagle. Here, under the eaves of a house, I counted no less than forty-seven House Martins' nests, whose occupants seemed to be employed in mobbing a Kestrel. A fresh egg lay broken on the ground below. We now walked a few miles to the great Vindel Lake, where we saw over thirty Ducks and many Fieldfares in the fir-woods. A long row in the chilly evening brought us to the Swedish house of a wealthy Lapp who had "retired." The northern lights were very fine as we went in. The gentleman had just been taking up his fishing-nets; amongst the catch were Perch, Roach, Jack, Gwyniad, and Turbot. Perch-skins are dried and used for clearing the coffee in Sweden. After much mock-ceremony we retired to the state-room of the house, and woke next morning (Aug. 23rd) to attempt a breakfast off rancid roach, and high exceedingly hard and dry reindeer-flesh. We saw Magpies here for the first time. A walk over the table-land between two river-valleys gave us some fine "multer" or cloud-berries, and also a sight of two Cranes, which rose in the distance from a marshy pool, and flew slowly off, making a harsh trumpeting noise. We also saw a Great Grey Shrike, *Lanius excubitor* pursuing two Fieldfares, two Buzzards, and three Siberian Jays—birds whose flight and gait proclaimed them to be of the Jay tribe, though their plumage would lead one to suppose otherwise. I saw a Lesser Spotted Woodpecker, and the only Owl seen the whole time, at our sleeping place for the night.

Next morning we started for a walk through monotonous and uninteresting fir-woods. The path was exceedingly hard to find in places—in fact, there was really no path at all. We put up a hen Capercailzie, that was sitting on a fir tree; she flew to the ground and ran off very quickly. Only one Ryper was seen, but as we descended a slight hill, a doe Reindeer with her two fawns came trotting quietly through the forest right up to the path; on

seeing us they made a sudden swerve and galloped back through the wood. A buck Reindeer was observed by the other two members of our party. A great many Blue and Coal Tits were to be seen on the fir trees. The sharp scream of a Buzzard and the hoarse croak of a Raven were heard. At about 11 a.m. we came to a reed-fringed lake, Moskjaure, which we crossed, and then proceeded over some thickly-wooded undulating ground till we saw below us the great Udjaure, the middle section of the great Horn Lake. The scenery was extremely beautiful; the shores of the lake were covered with sweetly-perfumed shrubs. Having found a boat, we rowed across the lake to a farmhouse on an island, Norrholm, where we had our mid-day rest. Here there was a long narrow plank beneath the eaves which supported the House Martins' nests. We were shown the skull of an enormous Pike taken from the lake. In front of the house large families of ducks were playing and bathing in the water most unconcernedly. Besides these one frequently saw an old duck surrounded by ten to thirty young ones; on the approach of the boat they would all get up to the surface, and half-flying, half-paddling, make a furious rush along the top for some yards, when they would settle down till the boat catching them up again made another "flap" necessary. At about three o'clock we started again to row to Arjeplong, the capital town of the district of Lappmark, a county as large as Yorkshire, passing several divers and families of ducks on the way. We arrived at Arjeplong, a little village with a church, a post-office, a guest-house, and a tendsman, or policeman, in time for an evening's Grayling fishing, when I observed a good many families of ducks and some immature Goosanders (Fiskände) on the Homafran. Four days were spent fishing at Arjeplong on the rapids with which the Shellefteo river connects the Homafran and the Udjaure.

Aug. 22nd. One of the inhabitants went out shooting and bagged eight birds—two immature Wigeon, a female Goosander, and the rest Red-throated Divers. As usual, I saw a great many families of ducks, and a good many Hooded Crows and Magpies. A pair of Buzzards were always to be seen round and about the rapids near the village, and a pair of Great Grey Shrikes. Lemmings swarmed, the dogs killed a great many daily; 1891 was what is called a "Lemming year." On one of the islands in between the series of rapids was a fine young buck Reindeer,

which had come there in the early summer, and now seemed afraid to recross the rapids.

Aug. 23rd. An expedition of seven guns set out to-day to shoot Mountain Hares on the islands, but they only got one! A Buzzard had a great quarrel with the Hooded Crows on the island in front of our quarters. During a long row I saw a great many Divers and Wigeon; some of the "flappers" I pursued in the boat, but without success.

Aug. 24th. A very wet day; saw a Merlin and many Divers (Lomme). On another island was a very familiar young Reindeer that insisted on accompanying me across the rapids, even trying to get into the boat. I saw a Lemming swim across the very swiftest part of the rapid in the streak of smooth just before the first broken water.

Aug. 25th. There were a great many ducks on the water to-day. The Buzzards were screaming very excitedly from a pine tree near the first rapids. In one of the shops here hung the skins of two Wolverines that were trapped near the rapids last winter.

Aug. 26th. A very stiff breeze carried us right up the Homafvan to Jackvik at the upper end, a distance of some forty miles. The only birds seen were Black-throated and Red-throated Divers, one Great Northern Diver, and a few Ducks.

Aug. 27th. We went up to fish in the Summselet, a little lake which forms one of the series between the Seddvajaure and the Homafvan. Four Buzzards appeared and always kept together, perpetually uttering their sharp screaming cries. We again saw Sandpipers, which we had not seen since the 19th, a great many Divers and Ducks, and a flock of seven Wild Geese, which rose from a little lake by which we reached our fishing. Into the Summselet the Shelleftoe Elv falls in two fine "fosses," and it likewise empties itself into the Homafvan by two long rapids. Above the two waterfalls Grayling do not occur, Trout and Char being the only fish. Our four friends, the Rough-legged Buzzards, kept meeting us all day long. As we returned at night laden with spoil, we put up a great many Teal from the willow-swamp by the lake-side.

Aug. 28th. Another angler had come to the Summselet to-day, in the shape of a fine Otter that had selected the top of one of the lower rapids for his "cast." In the island between the two streams I saw a party of three Siberian Jays eating

whortle-berries. I also surprised a Kestrel feeding on a young Fieldfare; a strong breeze was blowing, and a large flock of Fieldfares and Redpolls passed overhead in great confusion. The Buzzards were seen again, and the "rainbirds" were flying high, calling "kakera." When about two miles from home we were caught in a terrific hail-storm accompanied by thunder, lightning, and fierce gusts of wind; in the midst of it all I saw three Red-throated Divers flying round and round, evidently enjoying it.

Aug. 29th. We again saw the inseparable four buzzards, and also several Dippers, Sandpipers, and Divers.

Aug. 30th was spent in an investigation into the houses and stores. In one of the three farmhouses which constitute Jackvik was a manufactory of glue from Reindeers' hoofs and of lime from Reindeers' horns. We bargained for the skins of Grey Squirrels and sinews of Reindeers. The islands which lie in front of the house are said to be a great breeding-place for ducks; certainly we saw a good many broods of flappers about them. The commonest duck about Jackvik, our host tells, us is the Teal (Krekke). Capercaillies' tails are used for brushes, and we saw great quantities of them in the storehouses. The House Martins were still in the nest, but the arctic summer was so late that a great supply of insect-food was still to be found; one of the party saw an actual rise of May-fly on Aug. 16th. The Great Northern Diver occurs here, but not commonly. I have not seen any Cuckoos here, but our host tells me they are plentiful in summer; the Swedes call them "gauke," the same word as our "gowk."

Aug. 31st. We left Jackvik, and by an alternate series of walks and rows, broken by spells of fishing and visits to Lapp huts, we made our way to the first "Fjallstuga," or mountain-refuge, supported by Government. Buzzards, Divers, Sandpipers, and Wigeon were the commonest birds. One Lapp hut we visited boasted a cat, said to be very expert in drawing Char out of the water. At the Fjallstuga were five young Foxes, which appeared to be crosses between the Red Fox and the Arctic Fox; four were very timid and kept chained up, but the fifth was the pet of the house and seemed to take the place of a dog; he was great friends with the cat, with whom he kept up a continual round of play: a more amusing or active animal cannot be imagined. May-fly were still rising to-day, though in small numbers.

Sept. 1st. The Martins were still in the nest here. A very

sharp frost last night froze the water in the buckets. A continual mewling cry was heard over the lake, which was enveloped in a thick mist—the cry of some duck, perhaps Wigeon. Passing a Buzzard, more Wild Duck, and several Divers, we crossed the arctic circle at Sillyjouk where there was once a silver mine. We fished with success at the Seddvastrom, where an Osprey was seen fishing. The second Fjallotuga was reached, and Sept. 2nd gave us another half-walk, half-row, with fishing at mid-day, to the third and last Swedish Fjallotuga. This was reached by traversing several lakes and their connecting streams, and a sinuous, sluggish river, where I saw some nets in which a young Red-breasted Merganser, *Mergus serrator*, had been entangled. Here we met some Norwegian bear-hunters; they had not yet found any traces of Bears, but had just seen a large Eagle. Fresh snow had fallen on all the mountains round.

Sept. 3rd. In the window at Merkenis were a great many annuals growing—stocks, everlasting-flowers, and tomatoes. A hard walk over the pass through a snow-storm was unproductive of birds, except “Ryper,” Wheatears, and a Greenshank; and at 12.30 we crossed the boundary into Norway, eventually to descend to the Salten Fiord *en route* for Bodö and England.

AN INVESTIGATION INTO THE VARIATIONS OF THE VIPER IN GREAT BRITAIN.

BY G. A. BOULENGER.

A FEW years ago* I drew the attention of the readers of ‘The Zoologist’ to the great amount of variation presented by the Common Viper or Adder, *Vipera berus*, in the scaling of the head. Characters which for many years had been almost universally accepted as of sufficient importance for instituting a distinct genus (*Pelias*) proved, on investigation of a large series of specimens, to be inadequate even for specific diagnosis. The subject, which had been discussed by Lataste and Tourneville,† has since been more fully dealt with by Camerano, in his Monograph of the Snakes of Italy,‡ who goes so far as to lower

* ‘Zoologist,’ 1885, p. 373.

† Bull. Soc. Zool. France, 1879, p. 132; and 1881, p. 38.

‡ Mem. Accad. Torin. (2), xxxix., 1888.

the continental *Vipera aspis* to the rank of a mere subspecies of *V. berus*. Although the facts of the case are correctly stated by the distinguished Italian zoologist, I do not think herpetologists are at all likely to agree with his conclusions; the more so as I fear a similar treatment would necessarily apply to many other largely distributed species when we once undertake to test the constancy of technical characters on a very great number of specimens from various parts of their habitat. No single distinctive character, in the case of allied species, appears to be absolutely constant; combinations of characters seem to be all we have to fall back upon in such cases. That *Vipera aspis* should still be maintained as a distinct species I have no doubt. The large material which I have brought together, and which I am endeavouring to increase, justifies this assumption; for although no one of the three cardinal characters used for the discrimination of that species from *V. berus* is in itself constant, I have not yet come across a single specimen which I could not satisfy myself to belong, without doubt, to the one or to the other. What we are most in want of at present are accurate statistics showing the range of variation assumed by the species in any limited area. And I hope, by specifying the points which require investigation, to enlist the interest of those residing in districts where the Adder is abundant,—at the same time, by stating the results of my observations up to the present time, to satisfactorily answer some of the questions which have at various times been raised in the correspondence of this Journal.

1. HABITAT.—*Vipera berus* inhabits the whole of Northern Europe and Northern Asia, from Great Britain to the Island of Sachalin. In Scandinavia it reaches to 67°, in Western Siberia to 64°, in Eastern Siberia to 54°. It is found in France (as far south as 46° in the west, and also on the Central Plateau), in Belgium, Holland, Germany, Switzerland, Austria-Hungary, Bosnia, Italy as far south as the Gran Sasso. It is extremely scarce in the Jura, but common in the Alps, between 2500 and 9000 feet. Absent from the South of France and the Pyrenees, it reappears in the North-west of Spain (Asturias and Galicia). Eastwards it extends to Roumania, Southern Russia and Crimea, the Caucasus, the Kirghiz Steppes, and Turkestan.

The Viper, which is absent from Ireland and the Shetlands and Orkneys, occurs from the extreme North of Scotland to the

South Coast of England. It is very common in Surrey, Hampshire, and Dorsetshire, but rare in Cornwall. It has long been on record from the Isle of Arran, and, as my friend Mr. W. Eagle Clarke kindly informs me, from Skye and Lewis (Martin, 'Description of the Western Islands' [1695], pp. 37, 159); specimens from Islay and Mull, I am told by the same gentleman, are preserved in the Edinburgh Museum.

Are there any districts in Great Britain from which the Viper is absent?

2. SEXUAL DIFFERENCES.—It is of primary importance, when dealing with the varieties of this species, to discriminate the sexes, and nothing is easier. The males have the tail thicker, less gradually attenuate, and longer; its length is contained in the total from $5\frac{1}{2}$ to $7\frac{2}{3}$ times in the males, 8 to $9\frac{3}{4}$ times in the females. We shall see further on that the number of subcaudal shields is greater in males than in females.

3. SHAPE OF THE HEAD.—The head is always distinct from the neck, though often not more so than in the Common Snake, *Tropidonotus natrix*. This character is therefore worthless as a criterion for distinguishing the Viper from the harmless snakes. The snout is rounded, with obtuse angle all round, and never turned up at the end as is normally the case in *Vipera aspis*. In some specimens, however, from Spain and Central Asia, the upper edge of the snout, or canthus rostralis, is somewhat raised, the upper surface being slightly concave. I have not yet observed anything of the kind in British specimens.

4. SCALING OF THE HEAD.—A typical *V. berus* may be described as with three enlarged symmetrical shields on the crown, the sincipital shields, in addition to the supraocular shield, situated above the eye; these three shields are termed the frontal (the azygous anterior shield) and the parietals; between the frontal and the supraocular two or three scales form a longitudinal series. The rostral shield covers the vertical border of the end of the snout, and is just visible from above; it is followed by one or two small shields on the top of the snout, and separated from the nasal by a vertically elongated shield, the naso-rostral. The canthus rostralis is occupied by two shields, the canthal shields, the posterior of which is in contact with the supraocular. The space left between the shields above mentioned is covered by four to seven scales. On each side of the head eight or nine

labial shields border the upper lip; a series of scales borders the eye in front (præoculars), below (suboculars), and behind (postoculars); and two or three scales separate the præoculars from the nasal. In the following paragraphs we shall examine how far these characters are constant.

a. The Syncipital shields.—In British specimens they are nearly always well developed. In one specimen only (from Hampshire) I find the frontal much reduced and the parietals broken up into scales, the specimen in this respect agreeing with *V. aspis*. In two specimens (from Reigate) the parietals are very small. In five specimens (from Reigate, Hampshire, Somerset, and Morayshire), on the other hand, the frontal shield is so large as to be entirely, or nearly entirely, in contact with the supraocular on each side; and in others (from Hampshire) these shields are in contact posteriorly, or on one side only. The specimen from Morayshire, in which the frontal is not separated from the supraocular, is further remarkable in having the scales on the upper surface of the snout between the canthals fused to a single large shield, thus being the opposite extreme to the specimen from Hampshire in which the disintegration of the shields into small scales has reached its highest point. Any such extreme specimens, either in one or the other direction, are worth recording and preserving.

b. The Rostral shield is either as deep as broad, or its depth exceeds its width by one-third at the most.

c. Two is the normal number of *Canthal shields* on each side. I have, however, examined one specimen (from Sutherlandshire) in which they are fused to a single shield.

d. The number of *Labial shields*, not being always the same, has to be counted on both sides of the animal. In 35 out of 74 cases I find 8 shields, in 30 cases 9, in 4 cases 10, in 4 cases 7, in 1 case 6. Continental specimens have much more frequently 9 than 8 shields. *V. aspis* has from 9 to 11. Usually the fourth and fifth labials are situated below the eye, but in 15 out of 74 cases I find only the fourth below the eye, a character which has been given as distinctive of the Spanish form, in which, however, I have shown it is not constant.

It would be interesting to know whether specimens occur with as many as eleven upper labials.

e. The number of scales round the eye (præ-, sub- and postoculars) varies between 6 and 11 in British specimens, the two extreme numbers occurring only once in my lists, 8 or 9 being the usual number. In continental specimens I note 7 to 11 scales, usually 9 or 10. In *V. aspis* the number varies between 10 and 13.

As a rule, a single row of scales intervenes between the eye and the upper labials, but one specimen (from the Isle of Arran) has two rows on one side, as in *V. aspis*, and others have two series except just below the centre of the eye. I have also French and Norwegian specimens with two series of scales, either complete or interrupted by a single scale between the eye and the fourth labial. I would recommend special attention to this point, and the preservation of any specimen showing two series of scales between the eye and the labials.

f. Finally, the scales between the præoculars and the nasal are not unfrequently totally absent.

5. THE SCALING OF THE BODY.—The scales number 21 across the middle of the body. But there are exceptions. In one specimen from Petersfield I counted 23 scales, and in another from Scotland only 19. Two specimens from Norway with 19 scales are also preserved in the British Museum. Such exceptional specimens should be recorded and preserved.

6. THE VENTRAL SHIELDS.—In 37 British specimens I have counted 137 to 146 ventral shields (exclusive of the anal) in males, 139 to 154 in females. In foreign specimens 139 to 147 in males, 135 to 153 in females. The limit of variation on record (sexes not discriminated) is from 124 to 159.*

7. THE SUBCAUDAL SHIELDS.—These shields are usually in pairs, but it may happen that some are single. The number (counting each pair as one, and not reckoning the terminal, conical, or spine-like shield) is 35 to 40 in males, 28 to 35 in females, in British as well as in foreign specimens. In one male specimen from Petersfield I find as few as 33 shields, most of which are single. The number of subcaudals is stated, on reliable authority, to vary between 25 (♀) and 48 (♂).

8. THE COLORATION varies greatly, and, with the possible exception of totally black individuals, apparently irrespective of localities. Whitish or pale grey specimens, with black belly and jet-black dorsal zigzag band and spots, are males. Brown and brick-red specimens, with the markings of a more or less dark

* I have my doubts respecting a female specimen from Casaleone, Verona, recorded by Camerano (*l. c.* pp. 24, 25) as with 168 ventrals and 42 caudals. I suspect it to be a *V. aspis*, in which species the number of ventrals varies between 136 and 158 in the specimens before me, and the number of subcaudals between 32 and 38 (♀) and 37 and 48 (♂). The number of 178 ventrals given by Newman (*Zool.* 1869, p. 1660) is no doubt due to some error.

brown, are females. There are also brown males with the markings of an intense black, and grey males with brown markings. A very pretty colour-variety, which affects only females, is olive with brick-red band and spots. Some males have the lower surface of a pale greyish blue (*Coluber cæruleus*, Sheppard), with the outer ends of the ventrals and caudals black. Specimens with yellowish white chin and throat, which may be tinged with red, are females; males have the throat black, or whitish with the scales spotted or edged with black. In some Vipers the zigzag band is partly broken up into rhomboidal spots, but I have not yet seen or heard of British specimens in which it is entirely absent. Spanish and Italian specimens are known with a broad straight dorsal band, edged on each side by a lighter streak. The wholly black Vipers (*Coluber prester*, L.), of which two British specimens (Kent and Isle of Arran) are in the British Museum, are said to be usually females, and to bring forth normally-coloured young. However, black males exist, as testified by Jan and by Blum; the former author figures one from the Tyrol, the latter records another from Baden. An entirely black male, from Denmark, is in the British Museum, together with a female, from the same locality, which is black above and bluish grey beneath. J. Geithe (in A. B. Meyer's iv. Jahresb. d. Ornithol. Beobachtung. im K. Sachsen, 1889, p. 149) regards the statement that the so-called *V. prester* are mostly females as erroneous. According to his experience the deep-black Vipers are males; so-called black females are only of a very dark brown, showing more or less distinctly the black zigzag band. A female of the latter description produced in confinement 17 young, of which only one was black, and that one was a male. My own experience is that melanism has nothing to do with sexes, for, as stated above, I have examined perfectly black examples of females, as well as of males. Prof. Möbius has observed that in North Germany the black variety is, generally speaking, confined to fens, the brighter specimens to dry localities. Another variety (*Coluber scythæ*, Pallas), black above and white below, is only known from Germany and Russia. Any notes on the variations in colour and markings will prove of interest, provided the sex of the specimens has been ascertained.

9. THE SIZE.—*Vipera berus*, according to some continental authorities, may reach a length of 39 inches (900 millimetres), although but rarely exceeding 2 feet. Mr. G. E. Lodge (Zool.

1887, p. 272) mentions a specimen, from near Dorking, 26 inches long. The largest British specimens in the Natural History Museum measure nearly 2 feet (590 millims.). It is often stated that females are larger than males, but this is not supported by the material before me. The young at birth measure 6 to 6½ inches.

No statements as to size should be accepted unless the specimens have been actually measured with a tape. The length of the tail should be given, and the sex identified.

In concluding I would urge on all who have an opportunity, to take note of anything concerning the habits, time of pairing and of parturition, number of young, food, &c. It is now known that, in addition to small mammals (mice, voles, shrews, moles) which form their ordinary diet, Vipers will take young birds from the nest, lizards, and Batrachians,—thus drawing, for their bill of fare, on the four classes of terrestrial Vertebrates. A specimen from Hampshire which I recently opened contained a shrew and a frog; and Dr. F. Müller, of Basle, found a Salamander (*Salamandra atra*) in one from the Alps of Switzerland.

BIRDS OF THE ISLE OF MAN.

BY P. RALFE.

THE following notes on some Manx birds, the result of several years' observation, may be acceptable as relating to the Ornithology of a locality seldom mentioned in this journal. The fauna of the island, considering its isolated position and its relation to lines of migration, deserves more attention, I think, than it has yet received. It is observable that in Mr. Christy's Index to British local Ornithology, the Isle of Man is unrepresented. A list of Manx Birds, however, by Mr. P. Kermodé, has been published in the 'Transactions of the Isle of Man Natural History and Antiquarian Society.'*

In the following pages I confine myself almost entirely to what has fallen under my own notice, and have aimed only at giving an idea of the more striking points in our local Ornithology. I may remark upon the absence or scarcity of some familiar

* A short article on the Birds of the Isle of Man will be found in 'The Naturalists' Note-Book for 1867,' a periodical in 4to, of which only three volumes were published, 1867-69.—ED.

English birds, the Carrion Crow, *Corvus corone*, is entirely replaced by *C. cornix*; the following species are absent:—Blackcap, Blue, Marsh, and Coal Tits, Jay, Nuthatch, Whinchat, Wood Warbler, Chiffchaff, Green Woodpecker, Barn and Tawny Owls. The Redstart, Creeper, Nightjar, Long-tailed Titmouse, Spotted Flycatcher, and Bullfinch are either very uncommon or of exceptional occurrence. The Goldfinch also has' of late years become rare.

Almost all birds, *and their eggs*, are protected here by Act of Tynwald during the breeding season, and many are so protected all the year round.

MISSEL THRUSH, *Turdus viscivorus*.—The “Wood Thrush,” as it is locally termed, is now one of our most common and conspicuous birds, breeding freely in gardens and shrubberies, as well as in small plantations all over the country. In 1888 I saw a nest with eggs at Greeba, built on a ledge of rock about six feet from the ground. This position was the more singular as the rocky brow was in a plantation, and trees almost overshadowed it. Another was placed among the sticks of an old Magpie's nest in a small tree. A third was on the woodwork of a disused mine-wheel.

RING OUZEL, *T. torquatus*.—Sometimes seen on passage, but does not breed in the Isle of Man.

DIPPER, *Cinclus aquaticus*.—Specimens are occasionally obtained, but it is not a very common bird, and it is difficult to say whether any pairs breed in the island.

WHEATEAR, *Saxicola œnanthe*.—The numbers breeding bear but a small proportion to the flocks which pass on migration. From the ‘Migration Report’ for 1885 it appears that 52 were killed or captured in one night in April at the ‘Bahama’ l. v., Ramsey Bay, and on the same night “great numbers” were reported at Langness, showing a movement along our eastern coast.

STONECHAT, *Pratincola rubicola*.—This is one of the commonest and most noticeable of our wild birds. It remains both summer and winter on our gorse-covered commons, on all the rough margins of our sea-cliffs, and the high sod-fences and selvages of uncultivated ground that often border our smaller roads. I have even seen it perched on the top of a tangle-stem sticking from the *débris* of Douglas beach.

SEDGE WARBLER, *Acrocephalus schænobænus*.—This species

does not appear to have been previously reported in the Isle of Man, except at one of the lighthouses in a 'Migration Report.' I have seen it, however, on several marshy river-sides in the neighbourhood of Douglas.

LONG-TAILED TITMOUSE, *Acredula rosea*.—A few only have been obtained, and this species and the Great Titmouse are the only representatives of the *Paridæ* known to occur in the Isle of Man.

GREY WAGTAIL, *Motacilla melanope*.—Pairs may be found scattered along our stony streams in summer.

MEADOW PIPIT, *Anthus pratensis*, and ROCK PIPIT, *A. obscurus*.—These two birds are very characteristic of Manx bird-life. The former breeds plentifully on our uplands, and is often the only bird observed along miles of grassy moorland. On our pastures and the grassy edges of the "curragh" or marsh-lands, it is equally frequent. The latter flits through the wildest recesses of the sea-coast, haunting cavernous solitudes, the vastness of whose scenery dwarfs it to the size of an insect, or it feeds among the cast-up wrack of the beaches, or upon the weedy surface of the tidal reefs frequented by Gulls and Sandpipers. Many a lovely sea-margin, sprinkled in early summer with the lilac snows of the vernal squill, finds one of its appropriate charms in the sportive flight and song of this little dun-coloured bird. The Pipits are here called "Tweet."

MARTIN, *Chelidon urbica*.—Usually selects sea-cliffs for nesting here; it is not a common species, but there are small colonies on several localities on the coast. Its habit is not invariable here, however, for I have seen the nest on houses at Douglas and at St. John's.

SAND MARTIN, *Cotile riparia*.—The sandy brows which for many miles form the northern coast-line of the island are riddled with the holes of Sand Martins. In the neighbourhood of Douglas it is uncommon; a small colony which inhabited a bank at the top of a quarry above the Harbour, above the salt-waters of which the birds were constantly hawking, seems to be extinct.

CHOUGH, *Pyrhocorax graculus* (called "Caaig" on the west coast.—Still lingers in some wild localities. The only nest I have seen was built high up in a large sea-cave. In the particular locality where this was situated the birds have almost or altogether died out. Sir Wm. Jardine, in his 'British Birds,' writing of the former abundance of this bird in Man, remarks,

“We once procured nearly thirty in a forenoon”; for which wanton destruction Manx ornithologists owe him little gratitude.

MAGPIE, *Pica rustica*.—Very numerous here, and often nests at a comparatively low elevation in small plantations away from houses, two or three nests perhaps being in the same “orchard,” and only ten feet or so from the ground.

JACKDAW, *Corvus monedula*.—Breeds very abundantly on the sea-coast, but is now becoming common in the towns also.

HOODED CROW, *C. cornix*.—Breeds on the sea-coast, frequenting the same locality year after year, and in lonely woodland in the interior, but there, I think, less commonly. “Fannag” is the Manx name for this bird, but it is now universally known as “Greyback.” The Carrion Crow, *C. corone*, is unknown here.

ROOK, *C. frugilegus*.—In the neighbourhood of Douglas, I think, exceptionally abundant. In the spring of 1890 I noticed that a rookery at Lorn House, Castletown, had overflowed across the street to the chimney-stacks of a large house opposite, where two nests were built, on one of which a bird was sitting.

RAVEN, *C. corax*.—Certain situations are yearly occupied by the Raven. All the breeding-places known to me, except one, are in the sea-cliffs. The exception is a range of rocks terminating in an inland mountain, and commanding an extensive view, but with a high road and many houses near. At this place the exact site has been many times shifted, so that I have at one time seen four or five old nests (one not more than eight feet from the ground), but the locality is always occupied. It bears the Manx name, “Edd feeagh vooar” (*i. e.* Raven’s Nest), which argues some antiquity for the station. A rock not far off has the name “Creggan y Annag” (*i. e.* Crow’s Crag).

SWIFT, *Cypselus apus*.—Swifts are decidedly uncommon, though some are yearly to be found round the church towers of this town and also at Peel Castle.

LONG-EARED OWL, *Asio otus*.—This is the only Owl resident on the island, and is well distributed, if not very abundant.

SHORT-EARED OWL, *A. accipitrinus*.—Is not uncommon in winter. I have even seen eggs said to belong to this bird, and to have been obtained at Injebreck.

PEREGRINE FALCON, *Falco peregrinus*.—Inhabits several eyries on the coast. One of these, in the west, though constantly robbed, is yearly resorted to. In 1890 the eggs were laid on a

recess in a grassy brow at the top of a great precipice. Another nesting-place is in a wild and terrific situation on the east side of the island, in the thinly ivied side of a cliff, above an almost inaccessible strand, and a third in a very similar spot in the south.

KESTREL, *F. tinnunculus*.—Abundant in Man, frequenting the coast for breeding purposes. I have never heard of the nest being found in a tree or building here, and the eggs are always laid in a mere scraping on some rocky shelf, usually more or less shaded by ivy or other foliage, exactly as Sir W. Jardine has described the haunts of the bird in his district. The same deep gully or recess, with broken sides, is resorted to year after year.

SPARROWHAWK, *Accipiter nisus*.—Although, where a coast similar to ours occurs, the Sparrowhawk has been described as sometimes nesting on rocks, with us trees are always chosen. The bird is fairly distributed here.

CORMORANT, *Phalacrocorax carbo*, and **SHAG**, *P. graculus*.—Both these birds are common, especially the latter. The Shag breeds abundantly in some places, but not, so far as I have observed, in the interior of caverns, as described elsewhere.

GANNET, *Sula bassana*.—From May to September we frequently see Gannets off our coast, and no doubt they are common further out to sea at this season.

HERON, *Ardea cinerea*.—In almost every part of the island a Heron on the wing, or stationary among the tide-pools or by some reach in a lonely stream, is a familiar sight. They are to be seen at all seasons. On one occasion (Oct. 30th, 1890) I saw no less than eighteen together on the Santon cliffs. The Heron is known here as “Crane,” or sometimes by the Manx, “Coar-ny-hastan” (Eel-crane).

SHELDRAKE, *Tadorna cornuta*.—Though not common, a few appear in certain localities in winter, and a pair is even said to have bred at Langness in 1891.

ROCK DOVE, *Columba livia*.—Formerly bred in the caverns along the coast, but now appears to be extinct.

COOT, *Fulica atra*.—In the neighbourhood of Douglas, at least, this is a scarce bird, although a few are resident on a pool at a little distance.

GOLDEN PLOVER, *Charadrius pluvialis*.—So far as I have observed, this is a winter bird only in Man, though suitable breeding-places are plentiful.

RINGED PLOVER, *Ægialitis hiaticula*.—The commonest of all our shore birds, abundant on sandy and muddy parts of the coast. On the gravel banks of the northern shores nests are frequent.

LAPWING, *Vanellus vulgaris*.—Though large flocks are seen in winter, the Lapwing breeds here in but small numbers, a few pairs only being settled here and there during the nesting season.

TURNSTONE, *Streptilas interpres*.—Of rather uncommon occurrence. I have seen only one alive, in Castletown Bay.

OYSTERCATCHER, *Hæmatopus ostralegus*.—Called “Gareyvreck” by country people; is plentiful on our more open shores, and breeds on the northern coast in considerable numbers, and more sparingly in some other localities.

SNIPE, *Gallinago caelestis*.—A few Snipe certainly remain all the year round.

DUNLIN, *Tringa alpina*.—Though seldom found on the sands of Douglas, is common on the southern bays. Great numbers, in plumage changing to the summer red and black, may be seen on the northern sands in May, but do not seem to reside there in winter.

PURPLE SANDPIPER, *T. striata*.—During the last three winters a small party of these birds has frequented the same spot in Douglas Bay, with curious persistence.

COMMON SANDPIPER, *Totanus hypoleucus*.—A few pairs are scattered along our streams in summer, as on the Sulby, Santon Burn, and Glass, and in autumn may be seen with their broods at the mouths of burns on the sea-shore.

REDSHANK, *T. calidris*.—Frequent about Castletown in winter.

WHIMBREL, *Numenius phæopus*.—Small parties may be met with in May, on the shingle-beaches of both the northern and southern coasts, their fearlessness strongly contrasting with the shyness of the Curlew.

CURLEW, *N. arquata*.—Is abundant in winter, and even in summer flocks may be met with on the northern coast. A few breed, or did so a few years ago, on the elevated moorlands of the Rheeast; perhaps in other localities.

BLACK-HEADED GULL, *Larus ridibundus*.—Abundant from July to March; none seem to breed on the island, though I have seen numbers at Jurby at the end of May.

COMMON GULL, *L. canus*.—Occurs in the bays in small numbers in winter, a few being often seen with a large flock of

Black-headed Gulls or Herring Gulls. From the former they are easily distinguishable at some distance by the stouter build, deeper tint of the mantle, and more conspicuous white on the wing.

HERRING GULL, *L. argentatus*.—Breeds on most rocky parts of the coast, often in great numbers. Sometimes the nests are on rock-ledges, sometimes on steeply-sloping brows—in the latter case frequently under some small jutting point.

LESSER BLACK-BACKED GULL, *L. fuscus*.—A few to be seen at all seasons in the bays. It breeds in at least two colonies at the south; one or two are occasionally to be seen among the throngs of Herring Gulls at the nesting-places of the latter.

GREATER BLACK-BACKED GULL, *L. marinus*.—Single birds often appear for a short time.

KITTIWAKE, *Rissa tridactyla*.—There is a breeding colony on the southern coast.

RICHARDSON'S SKUA, *Stercorarius crepidatus*.—Occurs occasionally. Some years ago I saw one in Douglas Bay. An immature specimen was taken in a garden near Douglas in stormy weather in October, 1890.

MANX SHEARWATER, *Puffinus anglorum*.—A specimen was obtained on the south coast in the summer of 1890. This bird, though it obtained its name from its former abundance on the "Calf," has not, as is well known, been reported as breeding here for very many years.

RAZORBILL, *Alca torda*.—More widely distributed here as a breeding species than the Guillemot.

GUILLEMOT, *Lomvia troile*.—Breeds in abundance on the southern rocks.

BLACK GUILLEMOT, *Uria grylle*.—Breeds in several localities, though not in very great numbers. One of these places, though in a wild situation, is almost within a stone's throw of a town, and has been frequented for a number of years. In the beginning of September, 1890, one remained for a week or two in Douglas Bay. This bird was exceedingly tame, swimming unconcernedly among the pleasure-boats off the Promenade. It allowed rowers to come very near, and would even rise close to the same boat several times in succession. Under the clear water one could sometimes trace its dives for a considerable distance, the white wing-patches being very conspicuous. It uttered at times a weak piping cry. At the same season, in 1891, a single Black

Guillemot appeared again in exactly the same place, and behaved with the same tameness, though constantly chased by boatmen, and living amidst the noise and bustle of the "visitors' season."

LITTLE AUK, *Mergulus alle*.—On January 26th, 1890, one, seemingly just dead, was cast ashore at Onchan Harbour, near Douglas. In November, 1890, another was washed ashore at Peel.

PUFFIN, *Fratercula arctica*.—Great numbers breed about the Calf Sound.

RED-THROATED DIVER, *Colymbus septentrionalis*.—In September or October, 1890, one was seen swimming in Douglas Bay, and was eventually killed near one of the piers. This bird was in beautiful plumage, complete grey head and red throat, hardly spotted on the back. Several divers frequented the bay during the winter of 1890-91.

NOTES ON THE SEAL AND WHALE FISHERY, 1891.

By THOMAS SOUTHWELL.

It was my intention, having contributed these "Notes on the Seal and Whale Fishery" for ten consecutive years, to have given a summary of the results, and finally discontinued them; but the critical state of the Greenland Fishery renders the present time unfavourable for such a conclusion. It is probable that the Whaling trade from Peterhead is doomed to speedy extinction, and that, at the port which for so many years took the leading part in the Greenland Fishery, this once important industry will soon be only a tradition. As with a species, so with an ancient industry threatened with extinction, it seems highly desirable that the time and circumstances of such extinction should be chronicled, however imperfectly, and I am induced to record yet one more step of its downward course.

The want of success in recent years does not seem to arise entirely from the unsuitable character of the ice, or the prevalence of winds unfavourable to the fishery, although in both these respects there has been a singular run of ill-luck; nor does it arise from the oft-repeated but erroneous statement that the Whales have been driven farther north, where the ships cannot follow them, for the Whales have not altered their line of

migration, and the localities where they will be found at certain periods of the year are as well known now as in Scoresby's time; nor are they on the point of extermination, as supposed by some, for during the past season a considerable number of Whales were seen in their old haunts in the Greenland Seas. The want of success is, I believe, mainly owing to the introduction of steam, which enables the modern ships to follow the Whales in localities where formerly they would have been safe from molestation; the rattle of the screw also, which can be heard by the Whales for long distances, is now to them a well-known sound; above all, the eagerness with which they are followed up—all the vessels consorting together—has at length rendered them so wild as to be practically unapproachable. Even now, however, it appears quite possible that a vessel approaching their haunts alone, and in the quiet manner which prevailed before the introduction of steam, might be rewarded by the success of old. Certainly the fishery appears to be in a hopeless condition at present in the old Greenland haunts; but it is possible that a few years' rest might restore the confidence of the Whales, and that, if then pursued with due caution by a limited number of vessels, paying cargoes might again be made. The same applies with equal force to the Davis Straits Fishery.

Most of my readers have doubtless seen the Brothers Gray's pamphlet on the possibility of transferring the pursuit of the Whalebone Whale from the ice of the Northern Hemisphere to that of the Southern. It is a bold suggestion, and shows that the spirit of the Elizabethan mariners still animates their Victorian successors, and, if successful, one more cutting from the industrial parent tree will be engrafted on the Greater Britain at the Antipodes—let us hope to flourish with all the vigour which the lusty young stock can impart to it. I am informed that sufficient support has already been received to fit out one vessel, and that it is hoped a second will accompany her; it therefore seems probable that, under a new Commander, the 'Eclipse,' which has so long taken the lead in the Greenland Fishery, will be the pioneer in a new enterprise in the distant waters of the Southern Hemisphere.

The past season at the Newfoundland Sealing has proved a very successful one, the total catch by the nineteen British vessels present amounting to 343,495 Seals against 209,000 in

the season of 1890. These, too, were very equally distributed, eleven vessels having more than 15,000 each, *viz.*, the 'Terra Nova,' 35,239; 'Neptune,' 33,875; 'Hector,' 31,379; 'Wolf,' 30,337; 'Greenland,' 25,907; 'Vanguard,' 22,306; 'Falcon,' 20,855; 'Esquimaux,' 20,563; 'Aurora,' 16,723; 'Polynia,' 16,535; and the 'Leopard,' 15,815. The remaining eight vessels averaged 9245 Seals each, and only three of these were poorly fished. The produce also sold very fairly, the oil producing £24 per ton, and the skins averaging about 5s. 3d. each. The passage out to St. John's is described as a very bad one, and the unfortunate 'Polynia' (to be again alluded to) seems to have had a particularly rough time of it. Good weather was experienced at first, but, about a week after leaving Dundee, Capt. Guy was steaming dead slow in a gale from the W.S.W., accompanied by a heavy head sea, and his ship labouring very much, when, just as he was changing the watch and while a large number of men were on deck, the vessel shipped a terrific sea and one of the men was killed almost instantaneously, ten others being more or less seriously injured. Capt. Guy is of opinion that the sea which struck the 'Polynia' must have been a tidal wave. The weather then moderated, and all the injured men did well, and were ready for work when the vessel reached the ice.

The young Sealing in Greenland again proved an absolute failure, owing to the severe frost which prevailed in the spring, and the total number brought in from both the old and young Sealing, by five Scotch vessels, was only 1560 against 6603 in the previous year. The Norwegians, I am informed, killed some 20,000 or 30,000 young Seals.

The total result of the Newfoundland and Greenland old and young Sealing, so far as the nine Scotch vessels were concerned, was 90,590 Seals (of these 89,030 were from Newfoundland, and were included in the total already given for that fishery), yielding 986 tons of oil (as against 54,686 Seals and 647 tons of oil in the previous season): these, at £24 per ton for oil, and say 5s. 3d. per skin, would probably realise about £47,444, against a similar estimate of £29,993 in the season of 1890. This excellent result, it will be observed, is due to the success of the Newfoundland voyage.

The Dundee fleet was reduced to nine this season by the withdrawal of the 'Earl of Mar and Kellie,' and of these the

'Polynia' was crushed in the ice. Only three vessels—the 'Eclipse,' 'Hope,' and 'Active'—left Peterhead, the sole representatives of a fleet of twenty-eight vessels which sailed from that port in the year 1859.

The chief characteristics of the Davis Straits voyage appear to have been a very stormy passage out, and the enormous quantity of ice on the West Coast of Davis Strait. The passage through Melville Bay was open, but the captain of the 'Esquimaux' states that, in his experience of twenty-three years, he had never come across so much ice in one season. The 'Chieftain' was seriously damaged on her voyage out, and was afterwards beset in Lancaster Sound, and, after seeing only two or three Whales, arrived home "clean." A worse fate befel the 'Polynia.' On the 10th of July, in the neighbourhood of Admiralty Inlet, working through the ice which a strong N.E. wind was drifting in against the land, just, as her Captain believed, as she was passing the last jam of ice which shut out his vessel from the open water beyond, she was caught by the stern between two floes, and crushed so badly as to render it impossible to save her. The crew, thirty-seven in number, took to the ice, and, about six o'clock on the morning of the 11th, the 'Polynia,' after thirty summers spent in the Polar Seas, went to her long resting-place under the ice of Lancaster Sound. On the same afternoon, to the great joy of the crew, who were on the broken ice twelve miles from the shore, the 'Maud' hove in sight, but was unable to reach them. Early on the morning of the 12th the 'Aurora,' a much more powerful vessel, came to their assistance, and speedily forced her way through the ice to their rescue. The crew was afterwards divided between the 'Maud,' 'Aurora,' and the 'Esquimaux,' and all eventually reached their homes in safety.

Only six Whales were captured in the Straits Fishery, two of the vessels returning "clean." Other Whales were seen, but not captured, the 'Maud' unfortunately losing two, the harpoons drawing after, twenty-one lines being carried out in one case, and thirty lines* in the other! A large number of Bears were killed in the Straits, and 569 White Whales obtained in Lancaster

* A whale-line is 120 fathoms long: this fish therefore took away 4 miles 160 yards of line, the great weight of which alone would draw the harpoon unless very firmly fixed.

Sound by the Esquimaux; 215 Walrus, two White Foxes and a few Esquimaux Dogs were also brought home by the different vessels.

The condition of the ice in the North Greenland fishing-grounds has so long been unfavourable for Whaling that it was thought surely this season a change must have taken place: buoyed by this hope, and tempted by the fabulous price which whalebone has reached, the bolder spirits determined to try once more. The result, to all but two fortunate exceptions, as will be seen, was nothing but disappointment. There was a splendid fishing-bight in lat. $78^{\circ} 40'$ off Prince Charles Foreland, and here all the Whales of the season were killed. On May 17th the 'Eclipse' killed her only Whale (a small bull, of 5 ft. 6 in. bone); on the 19th the 'Hope' met with the like fortune, her hauls being not much larger than that taken by the 'Eclipse'; and here also the 'Polar Star' and the 'Active,' both of Dundee, secured, the former six and the latter three, Whales. On the South fishing-ground there was an enormous accumulation of ice off the east coast of Greenland, and the ships lost the whole of the season steaming through the cracks and lanes, for a distance of 350 miles, with no result. The 'Windward' (which with the 'Eclipse' and 'Hope' formed the whole of the Peterhead fleet) returned with only 111 Seals, yielding two tons of oil. A considerable number of Whales were seen by the ships, but they were shy and unapproachable, the good fortune of the two Dundee vessels being probably accidental.

The total produce of the Scotch whaling voyage was seventeen Whales, producing 259 tons of oil and 8 tons 9 cwt. of bone. The small size of the Greenland Whales will be apparent when I state that the eleven only averaged rather less than 8 cwt. of bone each, whereas five of the Davis Straits averaged $16\frac{1}{2}$ cwt. each, the sixth being a sucker of 1 cwt. This is contrary to what was formerly the case, the Greenland Whales being accustomed to yield more oil and bone than those from the Straits; fish of 20 tons of oil and 1 ton of bone were not unfrequent.

The oil may be valued at £20 per ton, but it is difficult to value the bone as so much of it was under-sized; the present price of size bone (*i. e.* over six feet) is £2800, but fully 20 per cent. would be worth only £1400 per ton; perhaps, therefore,

£2520 per ton would be a fair average, and at this price the total product of the Whaling voyage would be about £26,000.

I have, as on previous occasions, to express my thanks to Capt. D. Gray and his son, Mr. R. Gray, of Peterhead, and Mr. D. Bruce and Mr. Kennis, of Dundee, for their kindness in supplying me with information; also to Mr. Walter Thorburn, of Greenock.

NOTES ON MARINE MOLLUSCA COLLECTED ON THE COASTS OF DONEGAL AND DUBLIN.

BY H. CHICHESTER HART, F.L.S.

(Continued from page 56.)

Psammobia tellinella, Lam.—Derry. Miss Honoria Galway presented me with a fresh specimen which she had taken at Magilligan.

P. ferröensis, Chemnitz.—Dublin and Donegal, common.

P. vespertina, Chemnitz.—Donegal: I have gathered two specimens (one fresh) on the White strand between Buncrana and Fahan. Near Galway, beyond Salthill, this species is not unfrequent.

Donax vittatus, Da Costa (*D. anatinus*).—Dublin and Donegal, common. One of the few species which comes ashore unbroken on a thoroughly exposed, oceanic, sandy coast.

Mactra solida, Linn.—Dublin and Donegal, common. This appears to be remarkably plentiful on the shores of Inch Island, Lough Swilly.

M. subtruncata, Da Costa.—Donegal: Kinnegar and Inch Island, Lough Swilly, not uncommon.

M. stultorum, Linn.—Dublin: very common. Donegal: locally abundant, as on Tramore strand, west of Horn Head, with *Lutraria elliptica*, and elsewhere.

Lutraria elliptica, Lam.—Dublin and Donegal, common.

Scrobicularia prismatica, Montagu (*Syndosmya*).—Dublin: South Bull and Portrane, sparingly.

? *S. nitida*, Müll.—Dublin, near Baldoyle. I am not sure of the specimens.

S. alba, Wood.—Donegal: Inch Island, Lough Swilly.

S. tenuis, Montagu.—Donegal: Fahan and Inch Island, rare.

S. piperata, Bellonius.—Donegal: Doagh Estuary, Sheephaven, and Inch Island, Lough Swilly, abundant. Dublin: a single valve at Portrane; on recently deposited mud between Baldoyle and Portmarnock, where it does not seem to have been known till lately, and is now frequent. Always on muddy ooze.

Ceratisolen legumen, Linn.—Dublin coasts, common. Donegal, frequent on the Lough Swilly shores, and I have gathered it westwards near Horn Head, and elsewhere.

Solen ensis, Linn.—Dublin and Donegal, frequent.

S. pellucidus, Pennant.—Dublin: Portmarnock and North Bull, but not common. Donegal: frequent, especially westwards, about Dunfanaghy and Breaghy.

S. siliqua, Linn.—Dublin and Donegal, abundant.

S. vagina, Linn. (*S. marginatus*).—Donegal, one specimen (perfect) was picked up by me on the Kinnegar strand, Lough Swilly. It has been stated that this shell occurs at the North Bull, but I never found it there, though I have repeatedly sought for it. A search is, however, never satisfactory, as it cannot be distinguished without some slight examination from the common razor, and the abundance of the latter may often conceal the rarer one.

Lyonsia norvegica, Chemnitz.—Dublin: formerly found on Portmarnock strand (Miss Willan). Derry: Magilligan (Miss H. Galway). Donegal: I gathered a single fresh valve on the White strand, Buncrana, Lough Swilly, and a broken one on Ballinastocker, in the same Lough.

Thracia papyracea, Poli.—Dublin: formerly common on the Velvet strand, Portmarnock (Miss Willan); one specimen there, 1881. Donegal: Abundant on the Kinnegar, Lough Swilly, and frequent elsewhere on Donegal coasts. Derry: Magilligan (Miss H. Galway). Var. *villosiuscula*, one specimen at Portmarnock.

Corbula gibba, Olivi.—Dublin and Donegal, frequent.

Mya arenaria, Linn.—Dublin: Howth, &c. Donegal: Inch and Buncrana, Lough Swilly.

M. truncata, Linn.—Dublin and Donegal, frequent.

Saxicava rugosa, Linn.—Dublin: abundant in the limestone near the village of Howth, and elsewhere. Donegal, frequent. Var. *arctica*, N. Bull, Dublin; Mweelfinn, Sheephaven, Donegal.

Pholas dactylus, Linn.—Dublin: Portmarnock, a single valve. Donegal: Kinnegar, Rathmullan (Mrs. Batt).

P. candida, Linn.—Dublin, a few valves on the strand near the village of Howth, and also, rarely, on the Velvet strand, Portmarnock. Donegal: White strand, Buncrana. I have noticed this species as occurring freely in Wexford. Near Teeling Bay, Donegal (Carrick), *Pholas* castings and borings are very plentiful in limestone rocks, sixty feet above the present sea-level.

[*P. parva*, Linn.—Dublin: formerly single valves were gathered at Portmarnock (Miss Willan).]

P. crispata, Linn.—Dublin: Portmarnock and Portrane, single valves.

Teredo navalis, Linn.—Derry: Magilligan. Miss H. Galway gathered the tube (apparently of this species) on the strand.

CLASS SOLENOCONCHIA.

Dentalium entalis, Linn.—Dublin: Ware Hole, Drumleck, Howth; dredged at Ireland's Eye.

CLASS GASTEROPODA.—Order CYCLOBRANCHIATA.

Chiton fascicularis, Linn.—Donegal: the Hassans, Mulroy Lake, in about five fathoms, brought up on rocks in blasting operations.

C. cinereus, Linn.—Dublin: amongst seaweed and shingle at the Ware Hole, Howth. Donegal: Marble Hill shore, near Ards; Drimnacraig, Fanet, &c.

(To be continued.)

NOTES AND QUERIES.

Irish Natural History.—Those who take an interest in Zoology in Ireland must have felt the want of some popular Journal, wherein the observations of naturalists resident in that country might be periodically reported, and a useful medium of communication established. We are glad to learn that at length this want is to be supplied. In April next, we understand, there will appear the first number of 'The Irish Naturalist,' which is described on a prospectus which has reached us as "a Monthly Journal of general Irish Natural History, and the official organ of the Roy. Zool. Soc. of Ireland, the Belfast Nat. Hist. Soc. and Belfast Nat. Field Club, the Dublin Nat. Field Club, and the Armagh Nat. Hist. and Phil. Society." It is to be edited by Messrs. George H. Carpenter, B.Sc., of the Science and Art Museum, Dublin; and R. Lloyd Præger, B.A., Hon. Sec.

Belfast Nat. Field Club and Ulster Fauna Committee, and the prospectus gives the names of more than fifty naturalists resident in Ireland who have promised their support. It is to be published by Messrs. Eason & Son, of Dublin and Belfast, and the very moderate price of sixpence monthly should ensure it a wide circulation. A "Naturalist" column has also been opened in the 'Irish Sportsman,' a weekly journal circulating among a class with whom Natural History is usually popular, and Mr. G. Barrett-Hamilton has undertaken to edit this section of it, with the cordial support of other Irish naturalists. It will, it is hoped, be a means of encouraging the study of this subject in Ireland—a country where its knowledge is still far in arrear of the advantages for its cultivation. Communications may be addressed to the Editor, 'The Irish Sportsman,' 97, Middle Abbey Street, Dublin.

MAMMALIA.

Whiskered Bat near Scarborough.—A short time ago I received a bat, which, together with three others of the same kind, had been taken at rest behind some shutters at Willerby, near Scarborough, in the early part of October, 1891, and which did not appear to belong to any of the three species already recorded for this district. On examination it proved to be the Whiskered Bat, *Vespertilio mystacinus*, which, according to Messrs. Clarke and Roebuck, has only been recorded from one locality in Yorkshire, namely, Great Mytton, a small village near Clitheroe. Probably, however, since the publication of their work, it may have been noted elsewhere in the county, but this appears to be the first recorded appearance at Scarborough.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Polecat in Merionethshire.—Since my previous note (p. 74) another Polecat has been killed, and sent to me from the same locality as those previously mentioned. This animal had only three legs, having probably been trapped on some previous occasion. There are two misprints in my last note on this subject. "A park-keeper on the same beat" should read "A fresh keeper," &c.; and, a little further on, "all three" should read "all these."—C. H. CATON HAIGH (Aber-ia, Penrhyndeudraeth, Merionethshire, North Wales).

BIRDS.

Additions to the Birds of Donegal.—Since the publication of my notes on this subject, I have received the following additions from my friend Mr. Robert Norman, of Fahan. I insert them as I received them, and those who care to do so can add MS. notes to the original list in their proper places:—Fifteen to twenty years ago Quails were fairly frequent throughout the county. A Kingfisher was seen at Fahan (on Lough Swilly, east side), 1890; seven or eight years ago they were there always. Common Terns breed between the two embankments at Inch Island. Sheldrakes breed on Inch Island, Lough Swilly. A Great Northern Diver was shot

in the middle of August by Mr. Norman on Douglas Lake, in the west of the county (the locality where the Red-throated Diver breeds). The following ducks have been obtained about Fahan by Mr. Norman:—Wild Duck, Teal, Wigeon, Pintail, Shoveller, Scaup, Pochard, Goldeneye. The Bernacle Goose used to come to Fahan, but Mr. Norman never sees them now. Tree Creepers reside at Fahan, but are rare. Great Northern Divers never go up Lough Swilly as far as Fahan, but the Red-throated often does, and the Black-throated sometimes. Rough-legged Buzzard, *Buteo lagopus*, Gmelin.—A specimen of this rare British bird was obtained last November at Horn Head, by Mr. Gahan, a keeper. It has been preserved by Williams, of Dublin.—H. CHICHESTER HART.

Long-tailed Duck off Suffolk Coast in Summer.—A specimen of the Long-tailed Duck, *Harelda glacialis*, was shot at sea, off Thorpe, July 27th, 1891. This species is not a common visitor to this coast even in winter, and in summer is undoubtedly rare. The bird in question was a female: ovary healthy (apparently), with numerous small ova; crop and stomach filled with barley. The barley was washed out of a steamer sunk on the 'tail' of the Sizewell Bank, and was a great attraction to large flocks of "Black Duck," mostly Common Scoters, *Ædemia nigra*, with a few Velvet Scoters, *Æ. fusca*, among the common species. With the other diving Ducks that sought this land of plenty the solitary *Harelda glacialis* appeared. The specimen is a curious one, both in the colour and condition of the plumage. It is a pale variety, with somewhat thready hair-like feathers, presenting as a whole a very forlorn and woe-begone appearance. Head and neck as ordinarily described. Back and scapulars brown, with a broad edging to most of the feathers of dirty white, forming an irregular set of wavy transverse lines across the shoulders; those portions of the primaries that show when the wings are closed, showed over tail dirty white. Rectrices (or as much as is left of them) also white. Plumage worn and head bare. The pennaceous feathers with stumpy shafts and thready barbs of varying length, in some cases worn almost down to the shaft. This is particularly well seen in the tail-feathers; the shafts of some are broken off short, others are nearly their full length; the barbs are worn down to the shaft, particularly in the outer rectrices, and the barbules have entirely disappeared. This Duck had for some reason or other "missed" the last moult; the thready appearance of the plumage was no doubt owing to continuous wear and tear during some twenty-three months, and the pale coloration of the feathers may certainly be ascribed to the same cause. It would be interesting to know the cause of the non-moulting; dissection in this case gave no clue, and the ovaries appeared perfectly healthy.—F. MENTEITH OGILVIE (Sizewell, Leiston, Suffolk).

Hybrid Teal and Wild Duck.—Capt. Brooke, 79th Highlanders, of Thornhill, Culter, Aberdeen, sent a bird in the flesh to Mr. R. Small,

Edinburgh, which was lately shot in Anglesea. It is a cross between a male Teal and a Wild Duck. Size of a Wigeon. Head, Teal and Mallard gloss. Crest on head ruddy brown, and patch on cheek behind and below the level of the eye lighter yellow-brown. Sides of head glossy green. Under-side of tail and half of body, Wild Duck; tail, Wild Drake, but central feathers only very slightly up-curved. Breast spotted like Teal. Bill more like that of a Wigeon in shape and size. — J. A. HARVIE-BROWN.

[This is the hybrid which in the earlier editions of Yarrell's 'British Birds' was described and figured under the name "Bimaculated Duck." We have lately heard of a second example, which was taken in the second week of January last, in the decoy belonging to Capt. E. G. Pretyman, of Orwell Park, Ipswich.—ED.]

Heron catching a Rat.—I am aware that Herons catch Common Rats, having, on more than one occasion, seen full-sized examples of *Mus decumanus* taken from the stomachs of these birds; but it was not until lately that I saw the feat of capturing a Rat by a Heron accomplished. On Jan. 24th, looking from my study window, about midday, I saw an immature Heron standing in a dyke about 80 yards off in the meadow. Suddenly it made a desperate pounce, began struggling with something, and finally scrambled out of the dyke on to the meadow, holding a full-grown Rat by the neck between its mandibles. After getting some 20 yards from the dyke it let the Rat drop, and away it made for the ditch, the bird following it in clumsy style, head down like an angry goose. I took up my binoculars, and watched the affair with great interest. The Rat gained the side of the ditch, the Heron flew into the water and stood statue-like for a few seconds, then another flutter and plunge at something running along the dyke side, and again the Rat was between the bird's mandibles. This time the Heron seemed fatigued with the weight of the Rat, but floundered out of the ditch holding its captive firmly, and walked into the meadow about 50 yards from the ditch. By this time the Rat was dead, and the Heron, without letting it touch the ground again, dexterously worked it through its mandibles until the head was in its mouth; then it attempted to swallow the Rat head foremost, but a big Rat is not an easy morsel even for the expansive throat of a Heron. Its efforts were most ludicrous, and excited the attention of a flock of Gulls which were bathing on the partially flooded meadow, and for a few minutes wheeled round and round the Heron. Soon several Hooded Crows gathered to the spot, and alighted within a few feet of the big bird; they seemed to watch it with curiosity and amazement, as the Heron turned round in its efforts to swallow the Rat, which by this time had slipped about half-way down its throat, leaving the hind legs and long tail dangling from the bill. The Crows kept hopping round, with their heads sagaciously cocked on one

side, croaking to each other. The Heron seemed much annoyed by their pertinacious attentions, and stalked, stumbled, and fluttered to the far end of the meadow, where he disappeared into another dyke, closely attended by the officious Hooded Crows. The next day, at the same hour, the bird returned to the dyke, but a stupid neighbour must needs come out and discharge his gun at the Heron, and naturally it has not again visited us in the daytime.—H. W. FEILDEN (West House, Wells, Norfolk).

[An amusing observation, by the late Frederick Bond, of a Heron killing and swallowing a House Rat, may be found in Harting's 'Sketches of Bird Life' (Allen and Co., 1883, pp. 268, 269). Dr. Patrick Neill, of Canonmills, near Edinburgh, had a pair of tame Herons in his garden, and told Selby that he had seen the cock bird "fell a Rat by one blow on the back of the head, when the Rat was munching at his dish of fish." Ill. Brit. Orn., vol. ii., p. 13, note.—ED.]

Chiffchaff wintering in Somerset.—On Dec. 27th, 1891, a warm sunny day, at South Cadbury, in Somersetshire, I observed a little bird fitting rapidly among the boughs, and picking off the small flies which swarmed about the twigs of a hazel bush. I took it to be a Willow Warbler, but thinking it might turn out to be something even more unusual than that, with a snap shot I managed to secure it. On examination, its dark legs showed it to be a Chiffchaff. Montagu saw this species several times in winter in Devonshire; and Mr. Howard Saunders states, in his 'Manual of British Birds,' that "a comparatively small number occasionally pass the winter in various sheltered portions of our islands, especially in Cornwall." This example from Somerset may perhaps be worth recording among your notes. On my return to town I took the specimen to the Natural History Museum, and it is now being preserved for the national collection.—ROBERT H. READ (2, Queen Square Place, Westminster).

Unusual Nesting of the Chiffchaff.—Under this heading Mr. Allan Ellison writes, in 'The Zoologist' for December, 1891, that he found a nest of the Chiffchaff fully three feet from the ground. Although I have never found one so high up as this, I may state that in the locality where I obtained the bird referred to in the foregoing note I found the Chiffchaff very plentiful during the previous breeding season. On the morning of Whit-Monday, May 18th, 1891, I found no less than six nests of this bird, and one the previous evening, all containing eggs except one. In one of these nests the eggs were spotted with pale rusty red, resembling a common type of Willow Warbler's egg. Four of the nests were placed in the banks of hedgerows, generally on a tussock of coarse grass; two were in low brambles, about eight inches from the ground; and one was in a bunch of brambles overhauling a ditch, about two feet six inches from the bottom of

the ditch. In Scotland I have found the nests and eggs of the Willow Warbler in the boughs of a young fir tree, about eighteen inches from the ground, and in a hole in a wall more than two feet from the ground. Also the nest of the Common Wren among the slender topmost twigs of a young hawthorn bush, about eight feet from the ground. — ROBERT H. READ.

Curlews Migrating. — While standing in the garden here, on the morning of the 18th January last, I heard a familiar cry overhead, and on looking up saw a couple of Curlews, *Numenius arquata*, flying towards the north. I have never noticed these birds about here before, but there had been a strong gale blowing the previous day, which may account for their presence. — HORACE TERRY (Burvale, Walton-on Thames).

Further remarks upon Grey Shrikes. — While thanking Mr. J. Backhouse for his remarks (Zool. 1891, p. 310) on this subject, I should like to point out that the object of my notes and enquiries (Zool. 1890, p. 27; 1891, p. 187) was not the determination of the specific or non-specific character of *Lanius major*. This question seems to me to be settled. *L. major* interbreeds with *L. excubitor*, and intermediate forms are found; it can therefore only be considered as a local race, or a subspecies at the most. A very fit case for a trinomial in fact. Mr. Backhouse's notes seem to confirm my view, previously expressed (Zool. 1890, p. 27), that the specimens of *L. major* procured in Britain do not (usually at all events) agree with the description of the adult given in the books, since he, like myself, "has no recollection of having seen a specimen with a white rump." Our experience as to the darker coloration of the upper parts generally of this form (than of *L. excubitor*) also agrees. Prof. R. Collett has noted that in a female *L. major* rather darker than her mate (*L. excubitor*) the rump was "very little lighter than the back," and the pure bred *L. excubitor* to which it was paired had a rump very nearly pure white" ('Ibis,' 1886, p. 30). Also, Mr. F. B. Whitlock has kindly written me word of a Pallas' Shrike with "not the slightest trace of white on the secondaries," procured near Nottingham recently, in which the rump and upper tail-coverts are certainly nothing approaching white; the whole bird is rather smoky, and perhaps these parts are a trifle paler than the back." With regard to this point I feel confirmed by the further observations and enquires which I have been able to make in the view I have been inclined to take for some time (and have previously expressed), viz. that *L. major* (usually at all events) has a grey, and not a white, rump. I cannot quite follow Mr. Backhouse when he writes of a specimen, examined by him, which he supposes might be a hybrid between *L. major* and *L. homeyeri*. Such a hybrid, if it existed, would surely differ little from the typical *L. excubitor*; since *L. homeyeri* (itself an intermediate

form between *L. excubitor* and *L. leucoptera*) has a good deal more white on the secondaries than *L. excubitor*, while *L. major* has none. But I believe there is not much chance of *L. major* and *L. homeyeri* interbreeding, as their normal breeding ranges do not appear to overlap. It is apparently quite possible, however, for Prof. Collett has noted ('Ibis,' 1886, p. 30) an example intermediate between *L. excubitor* and *L. homeyeri* (nearer the latter than the former), procured at Throudjem on May 1st, 1881; and I may mention, for what it is worth, that I have a skin of *L. homeyeri*, received from a dealer, who was positive about the locality, labelled Archangel. Here I suppose it would meet *L. major*. Here Collett, also (*op. cit.*), gives *L. homeyeri* as occurring occasionally in Northern Europe. I have a skin, marked on one of the late Herr Möschler's labels "*L. homeyeri*," which is not of that form at all, but is intermediate between *L. excubitor* and *L. major*; it has a rump rather paler than these intermediate birds usually have, and, like Mr. Backhouse's example, is quite unmarked on the under parts. In *L. homeyeri* the rump is nearly, if not quite, white. If there are many similar specimens to this, labelled in the same manner, they will doubtless cause misconception in some cases. How this bird came to be in South Russia in May, as its label indicates, it is difficult to understand. If it was about to breed, then the interbreeding which Mr. Backhouse hints at can of course take place in Southern, as well as in Northern, Europe. But in that case we get a great confusion of the local races which Mr. Seebohm has set out in a most instructive account of our Grey Shrikes ('Siberia in Asia,' p. 243, footnote), and Herr R. Collett in his paper in 'The Ibis' (*ut sup.*). But it really seems almost impossible to assign exact ranges to the races. Herr Collett mentions a male procured at Hamar, on Nov. 8th, 1885, which is "hardly distinguishable" from a female of *L. borealis* from Nevada (March 28th, 1868), save for the short basal white mark on the secondaries, a character, he adds, "perhaps never met with in the true *L. borealis*." And he quotes Mr. Seebohm ('Ibis,' 1880, p. 115) for a bird from Amoor which was indistinguishable from *L. borealis* (of North America). The only conclusion to which it seems possible to arrive is, that there is one species of Great Grey Shrike which ranges over Northern and Central Europe, Northern Asia, and the northern part of North America, and branches off into forms known as *L. excubitor*, *L. major*, *L. homeyeri*, *L. leucoptera*, *L. mollis*, and *L. borealis*; that some of these races interbreed with their neighbours, and that they occasionally appear (perhaps wander) out of their proper ranges. From Herr Collett's observations it appears that a union of two Grey Shrikes (forms unknown), on the Dovre Fjeld, may result in the production of, apparently, typical males of *L. excubitor* and a typical female of *L. major*. A bird, of which the sex was unfortunately not ascertained, but which was probably a young female, was killed close to Banbury, on Dec. 23rd, 1891, and has come into my

possession. In this specimen the white patch on the secondaries is exposed to a considerable extent by moving the tips of the superincumbent coverts slightly to one side; the whole of the upper parts have a brownish tinge, especially noticeable on the sides of the face, and the under parts are very much marked with semilunar dark lines. Apart from the white on the secondaries, it might be said to approach *L. borealis* very slightly in colour.—O. V. APLIN (Bloxham, Banbury, Oxon).

Serin Finch in Devonshire.—So far as I am aware the first example of the Serin obtained in Devon was caught on Nov. 29th last, between Exmouth and Budleigh Salterton, by an old birdcatcher. It was in company with two Linnets, which were also taken. On going to the nets the birdcatcher was surprised to see a bird, which he at first took to be a hen Siskin; but on closer inspection it turned out to be a bird with which he was not acquainted, and which he called a "foreigner." A day or two after it was shown to me, and I expressed the opinion that it was a Siskin. I purchased the bird and despatched it for inspection to the Editor, who confirmed this view. It was evidently not an escaped bird, as on its being put into a cage it did not seem at home, like most recaptured ones become, but fluttered about and tried to regain its liberty, and would not feed; moreover, its plumage was quite uninjured. The previous occurrences of the Serin in England are but few; about a dozen only have been obtained, one of which was taken in the adjoining county of Somerset. The bird has been set up for my collection.—W. E. H. PIDSLEY (Fair Bank House, Polsloe Road, Exeter).

Raptorial Migrants in East Anglia.—In addition to those already recorded (p. 29) the following raptorial migrants have occurred:—Two immature Peregrines, a male from Boxford and a female from Lakenheath, both of which I saw in the flesh at Bury on Dec. 23rd; an immature White-tailed Eagle (of course announced in the local paper as a Golden Eagle), shot at Rushbrooke on Jan. 1st, which, by the kindness of the owner, I was permitted to examine in the flesh; and a young Merlin, shot near the barracks at Bury, about Jan. 18th. A Rough-legged Buzzard was trapped, on Jan. 7th, at Six-Mile Bottom, in Cambridgeshire, about eight miles west of the Suffolk border, and was offered to me; but as the captor reported it to be alive and almost uninjured, I placed him in communication with an ornithologist who has long made living raptorial birds a special study.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Iceland Gull near Aldeburgh.—During the hard weather prevailing at the commencement of the new year an Iceland Gull, *Larus leucopterus*, was noticed about Thorpe-mere, near Aldeburgh, and was finally shot on Jan. 7th, 1892. The bird had not acquired the adult plumage, and is probably one that has moulted at least twice, *i. e.* not less than a second

year's bird. Weight, 1 lb. 10½ oz. Length, 22¾ in. Wing, 16¼ in. Sex (by dissection), male. The stomach contained remains of a small fish. Glaucous Gulls can hardly be called rare along this coast, almost every winter bringing reports of birds seen or killed, most of the specimens being immature birds; but the Iceland Gull is undoubtedly much less frequently met with, and probably most of the notices of Iceland Gulls *seen*, and not killed, would be more correctly referred to *L. glaucus*. I am not aware that an Iceland Gull has been killed on any part of our sea-board recently, and I only know of one other previously obtained on Thorpe-mere.—F. MENTEITH OGILVIE (Sizewell, Leiston, Suffolk).

Black Redstart in Lancashire.—On Oct. 25th last I came across a Black Redstart, *Ruticilla tithys*, on the shingle above high-water mark between Lytham and St. Anne's-on-the-Sea. It flew only a few yards, so I put it up again,—in fact, four times in all. When flying, the red on the lower part of the back and tail, and the white patches on the wings, were very conspicuous.—F. BROWNSWORD (St. Anne's-on-the-Sea, Lancashire).

Puffin Inland in Notts.—*A propos* to my notes, in the last volume of 'The Zoologist,' on the occurrences of the Little Auk and Manx Shearwater in Notts, I may state that a Puffin, *Fratercula arctica*, was obtained at Bottamsall, in this county, in the autumn of 1889.—L. BUTTRESS (Grove, near Retford, Notts).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Jan. 21, 1892.—Prof. STEWART, President, in the chair.

Messrs. B. J. Austin, Stanley Edwards, and F. Turner were elected Fellows of the Society, and Mr. T. J. Moore, of Liverpool, an Associate.

On a motion by the President, it was unanimously resolved that an expression of respectful sympathy should be conveyed to Her Majesty the Queen, and to H.R.H. the Prince of Wales, on the loss sustained by the death of H.R.H. the late Duke of Clarence and Avondale.

Mr. M. F. Woodward exhibited microscopic sections illustrating the development of the teeth in the Marsupialia. He drew attention to Prof. Kükenthal's recent discovery of supposed rudimentary successors in all the teeth, thus showing that the adult set of teeth must be regarded as belonging to the first or milk series, and not, as generally supposed, to the second or successional dentition. These statements he was able to confirm for the incisors and second upper molar of *Didelphys*. In the Phalanger (*Trichosaurus*) he found no trace of these structures in connection with the

molar teeth, but they were present in the upper incisors. In no case did these rudimentary successional teeth pass beyond the condition of simple downgrowths from the enamel organs of the functional teeth.

Mr. J. W. Willis Bund exhibited a supposed hybrid between the Common and Red-legged Partridges; but in the opinion of ornithologists present it was merely a variety of the former species.

Mr. J. C. Mansel Pleydell exhibited a pair of malformed horns of the Roebuck, found at Whatcombe, Blandford, Dorset, their peculiar growth resulting from exostosis consequent upon injury sustained while in the sensitive condition. They resembled those figured in 'The Zoologist' for 1884, p. 364.

Mr. D. Morris communicated some further notes upon the Tick-pest of Jamaica, upon which an animated discussion took place.

A paper was then read by Mr. F. E. Weiss, "On the development of Caoutchouc-containing cells of *Eucommia ulmoides*, Oliver." He found that the bark and leaves of this tree, used medicinally by the Chinese, and called by them "Tu-chung," contain numerous elastic threads of silky appearance, which proved to be of the nature of Caoutchouc. They are contained in long unbranching cells, somewhat like latex cells which are found in the cortex and in the secondary phloem, and accompany in large numbers the ramifying bundles of the leaf and the pericarp. Unlike the ordinary latex cells, they are not derived from specialized cells of the embryo, but originate in all new growths, and can be seen forming in the cortex, the pith and the parenchyma surrounding the bundle of the petioles. They originate in twos, by longitudinal division of a very granular cell, both daughter cells growing out at their two extremities into a long tube which makes its way along the intercellular spaces by sliding growth. They never contain more than one nucleus, and the large granules of caoutchouc, which soon make their appearance, finally coalesce into a single solid mass, which has, when the tissues are broken, the appearance of a silky thread. Mr. Weiss regards these cells as a primitive form of latex cells, similar to those from which the more elaborate ones of the ordinary *Euphorbiaceæ* may have been derived.

The meeting was brought to a close with a paper by Dr. Jean Müller on the Lichens of Manipur.

February 4.—Prof. STEWART, President, in the chair.

A letter was read from General Sir Dighton Probyn, conveying the thanks of the Prince and Princess of Wales for the expression of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded by the President on behalf of the Society. A similar acknowledgment on behalf of Her Majesty the Queen was subsequently received from the Home Secretary.

Mr. John Rattray was elected and Mr. W. H. Blaber was admitted a Fellow of the Society.

Mr. J. E. Harting exhibited Gould's coloured plate of a Humming-bird, *Phaethornis longuemareus*, of which species a pair had made their nest in the drawing-room of Mr. Hamilton, of Queen's Park, Trinidad. The nest was built in a palm about five feet high, standing in a tub within the room. The first egg was laid on the 27th December last, the second on Dec. 29th, and a young bird was hatched on Jan. 12th. The circumstance was regarded as quite unprecedented, though Mr. D. Morris was able to quote a case, which came under his own observation in Jamaica, wherein a Humming-bird built its nest on the extremity of a saddle-bar in a verandah. Full details are given in 'The Field' of Feb. 20th.

Mr. Harting also exhibited some photographs of the egg-cases of two species of Dogfish (*Scyllium*), and made some remarks on the mode of deposition and period of incubation as observed in different aquaria.

Mr. F. N. Williams read a paper on the genus *Dianthus*. He pointed out that *Velesia*, *Dianthus*, and *Funica* form a natural group of genera distinguishable from the *Silene* group by their seeds, which have a facial hylum and straight embryo. *Velesia* may be distinguished from *Dianthus* and *Funica* by having half the number of stamens. There are, however, three characters to be relied on in distinguishing these two genera:—(1) the presence of an epicalyx of bracts; (2) the number of nerves to the calyx; (3) the junction of the claw with the blade of the petal. This last character was regarded as distinguishing very clearly *Dianthus* from *Funica*. In *Dianthus* the blade of the petal is abruptly narrowed into the claw, so that the two are distinct; in *Funica* the transition is gradual. Mr. Williams was of opinion that the species of *Dianthus* might be arranged in three natural groups (subgenera):—(1) in which the flowers are numerous and clustered as in "Sweet-william"; (2) the largest group in which the flowers are few and usually solitary on the branches of the stems, as in Carnation; and (3) a small group intermediate between *Funica* and the true Pinks, and corresponding with the genus *Kohlruschia* of Kunth. The number of species recognised by Mr. Williams in this monograph amount, in round number, to 250.

A paper, by Messrs. G. J. Hinde and Wm. Holmes, was then read, "On the Sponge Remains in the Lower Tertiary Strata near Oamaru, Otago, New Zealand." Near Oamaru there are beds of white, friable siliceous rock of upper Eocene age, almost entirely composed of sponge spicules, diatoms, and radiolaria, thus resembling in character the diatom and radiolarian ooze of the present deep seas. The sponge remains are all detached; they belong largely to the *Monactinellidæ*, though *Tetractinellid*, *Lithistid*, and *Hexactinellid* spicules are also present. The smaller flesh spicules of these different groups are perfectly preserved,

and thus enable a comparison to be made with existing sponges to which generically they mostly belong. In all 43 genera and 113 species have been recognized by their characteristic spicules. Many of the forms have not hitherto been known as fossil. The existing relatives of many of them now inhabit the Indian and Southern Oceans, but some are at present only known from the North Atlantic. The remains of deep-water sponges are intermingled in the deposit with others hitherto supposed to belong to moderate depths only, but in recent dredgings by H.M.S. 'Egeria' off the S.W. coast of Australia, at a depth of 3000 fathoms, there is a corresponding admixture of similar spicules.

ZOOLOGICAL SOCIETY OF LONDON.

Feb. 2, 1892.—W. T. BLANFORD, Esq., F.R.S., F.Z.S., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January.

Mr. W. Bateson exhibited some crabs' claws bearing supernumerary prongs. It was shown that these extra parts are really complementary (right and left) pairs of indices or pollices, according to their position of origin, and not repetitions of the two pincers of the claw, as was commonly believed.

Mr. Sclater made some remarks on the breeding of the Ground-Pigeons (*Geophapes*) in the Society's Gardens, and showed that the young of these pigeons, when first hatched, were not materially different in point of development from those of the typical pigeons, and that there was consequently no ground for separating the *Geophapes* from the order *Columbæ* on this account, as it had been recently proposed to do.

A letter was read from Prof. R. Ramsay Wright, enclosing some photographs of the heaps of skulls of the American Bison which are collected on the plains of the Saskatchewan, and piled up at the sidings on the Canadian Pacific Railway, awaiting transport, and which testify to the enormous number of these animals recently exterminated.

Mr. W. Bateson gave a summary of his recent observations on numerical variation in teeth. The facts given related chiefly to specimens of *Quadrumana*, *Carnivora*, *Marsupials*, and other orders of Mammals in the British and other Museums. The author pointed out that the ordinarily received view of homologies between teeth is based on the hypothesis that the series is composed of members each of which is either present or absent. In the light of the facts of variation, this hypothesis was shown to be untenable, and an attempt was made to arrive at a more just conception of the nature of the homology of multiple parts.

Mr. R. Lydekker described part of the upper jaw of a Sirenian Mammal from the Tertiaries of Northern Italy, containing milk-teeth. As these teeth

showed a marked Selenodont structure, it was urged that the specimen indicated the descent of the Sirenia from Selenodont Artiodactile Ungulates. It was incidentally shown that *Halitherium veronense*, Zigno, from the same deposits, belongs to *Prorastomus*, Owen.

A communication was read from the Rev. H. S. Gorham, containing descriptions of, and notes on, the Coleoptera collected by Mr. John Whitehead on Kina Balu, Borneo. The present communication related to the families *Hispidæ*, *Erotylidæ*, *Endomychidæ*, *Lycidæ*, *Lampyridæ*, and others.

Another communication from the Rev. H. S. Gorham and Mr. C. J. Gahan gave an account of some of the Coleoptera collected by Mr. W. Bonny in the Aruwimi Valley, Central Africa.

Mr. Sclater read some notes on a small collection of Mammals brought by Mr. Alfred Sharpe from Nyassaland, amongst which was a flat skin of Angas's Bush-bok, *Tragelaphus angasi*, a species of Antelope not hitherto recorded to occur in this district. He also gave the description of a new Antelope from Somali-land, proposed to be called *Bubalis swaynii*, after Capt. H. G. C. Swayne, R.E., who had furnished him with the specimens on which it is based. He likewise exhibited and remarked on some other examples of Antelopes from the same country contained in Capt. Swayne's collection.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Feb. 10, 1892.—Mr. FREDERICK DUCANE GODMAN, F.R.S., President, in the chair.

The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice-Presidents for the session 1892-93.

Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.; Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S. 'Pembroke,' Chatham; the Rev. J. A. Mackonochie, B.A., of St. Botolph's, Lincoln; and the Rev. A. Thornley, M.A., of South Leverton Vicarage, Lincolnshire, were elected Fellows of the Society; and Mr. Henry A. Hill and Major H. Murray were admitted into the Society.

Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued.

Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris.

Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere.

Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington.

The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phæbe*, taken in Grenada in May, 1891.

Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupæcilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge.

Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included:—*Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itieners*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphanogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigri-ventris*, Mayr, and *nigrocincta*, Sm.; *Leptomymex erythrocephalus*, Fab., and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new.

Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes, and Mr. Barrett took part.

Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

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ON THE DISTRIBUTION OF THE CIRL BUNTING IN GREAT BRITAIN.

By O. V. APLIN

(Member of the British Ornithologists' Union).

SINCE its discovery as a British bird, in the winter of 1800, by Montagu, who found it not uncommon among flocks of Yellow Buntings and Chaffinches, and procured several specimens near Kingsbridge, in Devonshire, the Cirl Bunting has been found to be a resident species in many other parts of southern England, as well as in some of the home counties and western midlands; and of late years it appears to have been increasing its range and pushing its way into Wales. In East Anglia it continues very rare, or unknown. But it is extremely local over most parts of its range, and its distribution is to some extent sporadic. Probably its presence in, or absence from, some parts of the country may be determined by the possibility or otherwise of obtaining certain kinds of insect food. Montagu's discovery that the young were fed especially upon the common grasshopper bears upon the point, but sufficient evidence thereon is not yet forthcoming. In winter it is partial to hay-seeds. This much seems clear—that, as a resident species, the Cirl Bunting avoids the colder parts of England, and undoubtedly has its strongholds along the south coast and in the mild climate of the west. The presence of tall trees, especially elms, seems to be a desirable, if not essential, feature in those districts which it inhabits. In autumn and

winter it undoubtedly wanders, and is met with as a casual visitor in various parts of the country.

When editing the 4th edition of Yarrell's 'British Birds,' Prof. Newton wrote, in the article upon this bird (vol. ii. p. 52):—"Its peculiar sporadic distribution in the breeding season deserves far greater attention than has yet been paid thereto, and at present its preference for certain localities is wholly unaccountable." The present paper is the result of an attempt to work out that distribution. With this end in view, I asked, through 'The Field' newspaper and the pages of 'The Zoologist' (1891, p. 190), for information on the British distribution of this bird, and I now take this opportunity of thanking the numerous naturalists who kindly responded to my request. I have here endeavoured to bring together the published records relating to the Cirl Bunting in this country, and have supplemented them by the information obtained from correspondents, and that already in my possession.

It is impossible to give at all an accurate idea of the distribution of this bird without tendering the whole of the evidence obtained; but it may be convenient to state shortly that the Cirl Bunting breeds regularly and commonly (but often locally) in Cornwall, Devon, West Somerset (rare in the East), Dorset, Hants (including the Isle of Wight), and Sussex (most commonly on the coast). It is also resident, but less common, in Wilts, Gloucester, Hereford, Worcester, Kent, Surrey, Berks, Middlesex, Herts, Oxon, Bucks, Warwick, and Bedford, being better represented in the first seven of this second group of counties than in the remainder, and local in all—*e. g.* in Oxon, where it is almost confined to the south. Elsewhere evidence of its residence is less satisfactory, but it has been observed in summer in Shropshire and Northamptonshire, and it has even bred in Yorkshire. As a winter, or casual, visitor it is recorded from Norfolk, Essex, Lincoln, Leicester, Notts, Derby, and Lancashire (where it is supposed to have bred). Its rarity on the east side of England is noteworthy—especially in view of the close attention which for many years has been paid to the Ornithology of some of the counties of East Anglia—and it is unrecorded from Suffolk, Cambridgeshire, and Hunts. There is no satisfactory instance of its occurrence in Cheshire, and it is unknown in Northumberland, Durham, Cumberland, and Westmoreland.

In Wales there is a flourishing colony in Denbigh, and it breeds in Brecon, Glamorgan, and Cardigan. To Pembroke it is only a casual visitor, and it has once been obtained in Merionethshire; elsewhere it is at present unknown, or unrecorded, but it is apparently pushing its way, and enlarging its range, in the principality.

To Scotland it is merely an accidental visitor, and it is unknown in Ireland.

YORKSHIRE.—Described in the 'Vertebrate Fauna of Yorkshire' (p. 32) as a "casual visitant of rare occurrence." Mr. Eagle Clarke writes me word that "It has several times been recorded for Toredale and Bedale" (*in litt.*). Of the seven instances recorded in the 'Vertebrate Fauna,' five were in January, February, and December. In 'The Naturalist' (1890, p. 148), Mr. John Ward, of Lofthouse, records finding a nest with three eggs at Lofthouse on May 31st, 1882, and another near Flushdyke, Ossett, with four eggs, on May 6th, 1889. At p. 320, in reply to an editorial note, he wrote that both pairs of birds were carefully observed through the field-glass, and he hints that one of the males was procured. For occurrence in winter in Sherwood Forest, near Doncaster, see 'Naturalist,' vol. ii. p. 164; and near Bedale and Richmond, 'Zoologist,' p. 3056. In 'The Field' of Oct. 1st, 1887, as I am informed by Mr. T. H. Nelson, Mr. J. Carter, of Masham, states that a young bird shot there may have been one of several turned out by his son. Mr. Basil Carter wrote Mr. Eagle Clarke (Aug. 4th, 1891) that he was sending him what he took to be a young bird and nest of this species. He took it the day before in a small plantation at Masham House. In a subsequent letter he mentioned those liberated there, and said he always thought they bred there, and were increasing yearly. Mr. Eagle Clarke tells me he has carefully examined the young bird, and is satisfied that it was of this species (*in litt.*). One was shot at Fen Bog, near Whitby, a female, on Feb. 28th, 1882, and is now in Whitby Museum. Two others were seen at the same time and place (Stephenson), *vide* Messrs. Clarke & Roebuck (Zool. 1884, p. 175).

LANCASHIRE.—"At Urmston," Mr. C. E. Reade states that "fifteen or twenty years ago the Girl Bunting was occasionally found in winter with the flocks of Yellowhammers and Finches, but since that time it has not been observed. Mr. C. S. Gregson

writes me that it has bred in his warren at Formby, and that two eggs and one bird from there are now in his collection. Elsewhere there are no records" (Mr. F. S. Mitchell's 'Birds of Lancashire,' p. 72).

CHESHIRE.—Mr. T. A. Coward, of Bowdon, writes me word that he has no note of its occurrence, though it has been reported "on rather slender evidence" (*in litt.*).

LINCOLNSHIRE.—"The Cirl Bunting is a rare bird here. The only occurrences since 1887 I have any note of are:—an adult male seen by me in this parish on Jan. 5th, 1889, the black feathers on the throat being then edged with grey. Another on Dec. 10th, 1889, seen on a hedge between Grainsby and Grimsby by my friend Mr. G. H. Caton Haigh when driving. Mr. Eagle Clarke and I also saw one near Spurn some years ago in the late autumn" (Mr. J. Cordeaux, *in litt.*). Mr. Cordeaux also mentions that he has had several reports of its not uncommon occurrence in the spring and summer near Gainsborough, and on the wild common land and warrens in the Trent district.

NORFOLK.—When the late Mr. Stevenson published the first volume of his 'Birds of Norfolk' (1866), the only instances of the occurrence of this bird in Norfolk were of a not very satisfactory character—*viz.*, the appearance of a specimen in the county (no more exact locality was given) in November, 1849, recorded by the late Mr. J. H. Gurney in 'The Zoologist' (p. 2651), and a pair stated by a correspondent in 'The Field' (May 24th, 1856) to have been killed in Norfolk in December, 1855, one of which was said to have come into the possession of the Earl of Leicester ('Birds of Norfolk,' p. 198). Mr. J. H. Gurney, in his list of the Birds of Norfolk given in Mason's 'History of Norfolk' (1884), was unable to add to these occurrences; but in his "Additions and Corrections" (December, 1885), he says, "Mr. E. T. Booth tells me he obtained two females at Hickling in the autumn of 1875." In Messrs. Gurney and Southwell's 'List' (Trans. Norf. and Norw. Nat. Soc., 1885-6), no further occurrences are recorded. In January, 1889, Mr. Gurney wrote to 'The Zoologist':—"On February [January] 29th [1888], two male Cirl Buntings were netted on Breydon Marshes; snow on the ground and 17° of frost that night, indicating that they were fresh arrivals, most likely from the interior . . . The Cirl Bunting is rare in Norfolk; an example, hitherto unrecorded, was seen some years ago at Hemp-

stead, by Messrs. Farn and Standen. Yet, so far as is known, this and [the Breydon pair] bring up the number of authentic occurrences to five only."

The Rev. Julian G. Tuck writes me word that the Cirl Bunting does not seem to have occurred in SUFFOLK. He adds that, as it has occurred in Norfolk and Essex, "doubtless its recognition in Suffolk is only a matter of time."

Professor Newton kindly informs me that he is not aware of a single instance of the occurrence of the Cirl Bunting in CAMBRIDGESHIRE (*in litt.*).

ESSEX.—"Though locally resident in most of the southern counties, this bird seems to be very rare in Essex. There are but two or three records of its occurrence in the county." The following evidence is given by Mr. Miller Christy:—Mr. W. D. King saw what he believed to be a Cirl Bunting near Middleton about 1834; he had then a stuffed one in his possession. Mr. C. E. Smith recorded one shot at Latchingdon, 1854. Mr. Arthur Lister, who was familiar with the note, heard one at Saffron Walden "several years ago," and one was sent in the flesh to Mr. Travis from Thaxted about 1885 ('Birds of Essex,' 1890, p. 128).

DERBYSHIRE.—Mr. A. S. Hutchinson, of Derby, writes:—"Very rare here. I have seen it once or twice during this last few years, in company with the Yellowhammer . . . in the Chellerton district near Derby, but I have not been able to discover the nest" (*in litt.*).

NOTTINGHAMSHIRE.—"Several specimens . . . have been taken near Ollerton. H. Wells shot five at Edwinstowe in 1859" (Sterland and Whitaker's 'Birds of Nottinghamshire,' p. 22). "I once found near Cotgrave [five miles S.S.E. of Nottingham] a nest containing eggs closely resembling those of the Cirl Bunting; the nest, too, was rather unlike that of the Yellow Bunting. Though I waited some time I could not get a view of the birds" (Mr. F. B. Whitlock, *in litt.*).

LEICESTERSHIRE.—"Rare. Has occurred but once, on the authority of Harley, who, writing between 1840—55, said he had met with it in company with the Yellow Bunting, in the lordship of Thurmaston" ('Birds of Leicestershire and Rutland,' p. 88). "My friend Mr. Wilett tells me he formerly met with a few pairs breeding at a spot he calls 'Willow Creek,' a rather

secluded portion of the forest [Charnwood]. The last year or two, however, he has failed to notice them" (Mr. F. B. Whitlock, *in litt.*). This evidence of the Cirl Bunting *breeding* in Leicestershire is hardly conclusive.

NORTHAMPTONSHIRE.—One, male, seen at Lilford, June 29th, 1866, by Lord Lilford; the only occurrence of the species in the county of which he was then aware ('Notes on Birds of Northamptonshire,' p. 110). One, male, caught by a birdcatcher in Lord Lilford's employ, on a farm of his not far from Bythorn, Dec. 18th, 1884 (Zool. 1885, p. 182). One, male, seen near Achurch, May 28th, 1889 (only the third occurrence known to the recorder). Several seen about the same spot about July 23rd, 1889 (Lord Lilford, Zool. 1889, pp. 427, 429).

BEDFORDSHIRE.—Its occurrence in winter is mentioned in Yarrell, a reference to 'The Zoologist' (s. s. p. 2562) being given. Mr. Howard Saunders says it is fairly common, although very local, on the chalk hills of Bedfordshire (Manual Brit. Birds).

SHROPSHIRE.—I take the following particulars from Mr. W. E. Beckwith's 'Notes on Shropshire Birds,' p. 79. Mr. Henry Gray, of Ludlow, wrote to Mr. Beckwith in 1882:—"On the 23rd June I saw a beautiful male Cirl Bunting near this town, and within the Shropshire boundary. It was sitting on a hedge by the road, and allowed me to approach near enough to see its black throat." One, the first in the county, is mentioned as shot on Jan. 11th, 1879, during intense frost. Its occurrence in winter is noted in Yarrell, with a reference to 'The Zoologist,' p. 9780.

HEREFORDSHIRE.—"This bird is a native of the county, and not an occasional visitant. 'Anyone,' says Mr. Ley, 'who can distinguish its note' will come to the conclusion that it is not an uncommon bird in Herefordshire. It takes up its residence in certain localities, where it is always to be seen year after year . . . one such spot on the Callow Pitch; another at Birch; another at King's Cuple; another at the Chase, Ross." A nest with eggs found close to Mitcheldean-road Station in 1880 is mentioned (Dr. Bull's 'Notes on the Birds of Herefordshire,' 1888, p. 39). Mr. J. B. Pilley, of Hereford, writes:—"The Cirl Bunting must be fairly common; it appears to be known by those who make no special study of birds. I have seen it within a mile of the centre of the city" (*in litt.*).

WORCESTERSHIRE.—Mr. C. Parkinson writes:—"The Cirl

Bunting, I find, is a regular Worcestershire bird, especially on the Malvern Hills. I have proof of its breeding at least once, and possess half-a-dozen records from various quarters in the county" (*in litt.*). But Mr. Lionel Talbot, of Kidderminster, has never to his knowledge seen it (*in litt.* 1891).

WARWICKSHIRE.—Mr. F. R. Ratcliff, of Brockenhurst, found a nest about seven years ago at Great Alne, near Alcester. He adds, "I do not think they are common there, as I only found this nest" (*in litt.*). In the last edition of Yarrell it is said to breed in Warwickshire. Mr. F. C. Aplin saw a male close to Brailes, June 13th, 1884. Mr. John Gardner, of Warwick, told me in 1884 that he shot one at Iddlecote a year or two before that date. He was well acquainted with the bird, and had stuffed specimens in his collection. Mr. R. W. Chase tells me of two taken by a birdcatcher at Northfield, Nov. 9th, 1888, and brought to him alive (*in litt.*).

GLOUCESTERSHIRE.—Mr. W. K. Mann writes from Clifton that the Cirl Bunting occurs there, but is very rare. He, however, meets with its nest nearly every year (*in litt.*). Mr. C. A. Witchell writes, "Within a radius of ten miles of Stroud Cirl Buntings are found, as nearly as I can guess, to the extent of one pair per square mile" (*in litt.*).

OXFORDSHIRE.—In the Chiltern district of South Oxon the Cirl Bunting is resident and fairly common, and it has been observed as far along the range as Chinnor. A few specimens have been recorded from the neighbourhood of Oxford. In the north of the county two nests were taken near Bloxham by Mr. C. M. Prior, which he believed belonged to this species. Two pairs were seen near South Newington at the end of May, 1885, and early in the same month, in 1889, I observed a male in song close to Bloxham. In winter a female was shot at the same place in December, 1878, and seven or eight from a little flock of ten at Banbury in 1871. It is therefore probably a resident in small numbers (*vide* 'Birds of Oxfordshire,' p. 83).

WILTSHIRE.—The Rev. A. C. Smith wrote in 1888:—"In addition to many notices of its occurrence in all parts of the county, north and south, from various observers on whose accuracy I can rely, I have repeatedly watched it in several localities which it regularly haunts, and have not only killed it, but have found its nest in the neighbourhood of Devizes." He mentions

the fact of its nesting in the previous summer in the gardens at Bassett Down; and also that it was described by the Rev. A. P. Morres as widely scattered, though not numerous in the neighbourhood of Salisbury. So, too, the fact of its breeding annually at Mere for the past twenty years, frequenting only one particular spot in the parish ('Birds of Wiltshire,' 1888, p. 191).

BERKSHIRE. — Captain A. Clark Kennedy records that the Rev. F. O. Morris, in the summer of 1826 or 1827, procured one of a pair at East Garston, near Lambourne, and also obtained their nest and two eggs. Also that some specimens in Gould's collection were procured in the grounds of Formosa, near Cookham, and that he was informed by Mr. Sharpe that this species was not uncommon in that neighbourhood. The author was not aware that it had occurred near Windsor ('Birds of Berks and Bucks,' p. 176). "A pair nested at Speen [Newbury], in the spring of 1884; two were shot at Speen, December, 1885, now in my collection" (the late Mr. Montagu H. C. Palmer, F.S.A., in list of the birds of the district in Hawkins' 'Guide to Newbury'). Mr. J. Young writes me word that it is "fairly common" about Faringdon, and breeds (*in litt.*).

(To be continued.)

ADDITIONAL NOTES ON THE BIRDS OF DONEGAL.

By J. STEELE ELLIOTT.

As the Ornithology of Ireland is just now attracting particular attention, in view of the preparations for a new edition of Thompson's standard work, any useful notes on the subject, however short, will doubtless be acceptable. I accordingly forward a few remarks on the Birds of Donegal, which may be regarded as supplementary to those already published by Mr. H. Chichester Hart (Zool. 1891, pp. 297, 334, 377, 421, 459; and 1892, pp. 32, 108). They are almost all derived from personal observation in the county.

PEREGRINE FALCON.—In addition to the localities mentioned by Mr. Hart, the Peregrine breeds on the Dawros Head, where it is locally called "Kite Hawk."

KESTREL.—Breeds among the rocky sides of Loughs Kiltorris and Doon.

GOLDEN ORIOLE.—One was killed near Dawros by Mr. Hamilton some years ago. I am unable to say whether this is the one referred to by Mr. Hart (Zool. 1891, p. 300) as obtained near Glenties, which is twelve miles distant.

WHEATEAR.—Very common about Inniskeel; breeds also in the stone-walls, and under large boulders. Local name, "Stone-chacker."

WHINCHAT.—One pair I noticed between Glenties and Port Noo.

ROCK PIPIT.—Very common on Dawros Head and the adjacent islands.

COMMON BUNTING.—Equally as common as the Yellow Bunting about Narin and Inniskeel.

GOLDFINCH.—At Dawros, Inniskeel, Narin, and this neighbourhood, the commonest finch. Breeds in every orchard and elderberry hedge around, also in hawthorn hedges, gooseberry bushes and larch trees.

LESSER REDPOLL.—Found nesting commonly in the above-mentioned districts.

TWITE.—A few pairs about Dawros.

CHOUGH.—In 1891 three pairs were found breeding on Dawros Head; commoner around the district in winter. Local name, "Jackdaw."

RAVEN.—Used to breed a few years since on Dawros Head, also on some old ruins on Lough Kiltorris, where the owner of the island always substituted some unfertile eggs, to keep the old birds employed, not wishing to destroy them, nor, on the other hand, allow them to unduly increase.

HOODED CROW.—Breeds also on the rocky sides of inland waters, as on Lough Doon, where a nest was found supported by the growth of ivy on the face of rock, and another on a small oak tree growing out from a crevice in the rocks; also on the rugged sides of Lough Derrydough. One nest containing five eggs was built in a small sallow about six feet high on one of the small islands in this lough.

JACKDAW.—Breeds in great numbers in the old ruined castle at Donegal, also in the chimneys at Ballybofey and Glenties.

SAND MARTIN.—In a small bank of sand-hills facing the sea, at Narin, I found two nests of eggs. Two or three other holes, I did not disturb.

SWIFT.—I observed a pair at Narin, and found the nest containing two eggs in a small crevice under the storehouse window-sill.

GOLDEN PLOVER.—A few pairs breed on the mountains near Glenties.

TURNSTONE.—A small flock of these birds was seen about Narin coast; and on Ronanish Isle five were seen on May 27th, 1891.

PURPLE SANDPIPER.—One sent to me was shot at Dawros April 2nd, 1890.

BAR-TAILED GODWIT.—One shot at Narin, August 21st, was also forwarded.

SANDERLING.—Common on the Narin strand in autumn, and I have seen a flock of about fifty, with a few Dunlins, on May 27th, and a smaller flock, May 29th, 1891.

HERON.—On Lough Dough, a few years ago, there were a few nests, but they have been since deserted. On Lough Doon a pair built in a small willow, but did not succeed in rearing their young. On Lough Derrydough a small island held fully fifteen nests last year, built on small willow trees. As in many other parts of Ireland, the Heron is here locally called "Crane."

CORN CRAKE.—Whilst driving right through the county, I was particularly struck with the number of Corn Crakes that were heard on the way. This bird seems very common here in summer and autumn.

BERNICLE GOOSE.—Great numbers visit the grass-covered islands and mainland about Dawros Head.

SHELDRAKE.—In addition to the localities mentioned by Mr. Hart (Zool. 1891, p. 460), the Sheldrake breeds on the sand-hills of Trimore and Ballyistan, also on Ronanish Isle, off Dawros.

POCHARD.—On May 19th, 1891, I saw a male on Lough Clooney.

GREAT NORTHERN DIVER.—Two were shot at Port Noo, January 15th, 1892.

RAZORBILL.—Breeds abundantly on Tormore and on the adjacent rocks.

BLACK GUILLEMOT.—Breeds in fair numbers on the "Banks of Tormore."

SHAG.—A colony of about 500 on “Banks of Dunmore.”
Local name, “Skart.”

ARCTIC TERN.—Breeds in great numbers on Ronanish Isle; also on Innisparnog till 1890, when they all deserted and went to Ananish Isle, four miles away. Local name, “Durrock.”

LESSER TERN.—I saw about a dozen clutches of eggs on Narin strand, and about six pairs of birds at Ballyistan strand.

COMMON GULL.—About fifty pairs breed on the islands of Lough Burragh, and a less number on Lough Doon, probably because, on the latter, their eggs are gathered, chiefly from off the walls of an old Danish fort, about fourteen feet high and four feet thick; one pair nested on Lough Kiltooris, but their eggs were taken and they failed to try the old proverb again. Local name, “Lough Gull.”

GREAT BLACK-BACKED GULL.—Three pairs were breeding in 1891 on one of the islands of Lough Derrydough, one pair on Lough Dough, others on Ronanish Isle, and on a rock off Tormore.

STORM PETREL.—Judging from their notes heard at night and early morn, a fair-sized colony exists under the loose boulders on Ronanish Isle.

THE BRITISH MARTEN.

MARTES SYLVATICA, Nilsson.

BY THE EDITOR.

(Continued from Zool. 1891, p. 459.)

IN ‘The Zoologist’ for December last (pp. 450—459), under the head of counties, I gave some account of the distribution of the Marten in England, commencing with Northumberland and ending with Cornwall, the consideration of Wales, Scotland, and Ireland being reserved for future consideration.

Before dealing with the remainder of the British Islands, however, it will be well to make such additions and corrections to the notes relating to the English counties as have come to hand since the publication of my former article. I am indebted to several correspondents for information on this subject, and it will be convenient perhaps to take their letters in the order of the counties already named.

NORTHUMBERLAND (Zool. 1891, p. 450).—Mr. George Bolam, of Berwick-on-Tweed, writes:—"In order to make Mr. Harting's account of the present distribution of the Marten in England (Zool. 1891, pp. 401—409, and 450—459), as complete as possible, perhaps I may be allowed to call attention to what seems to be an error in the paragraph, on p. 450, relating to Northumberland. From this paragraph it would appear that two Martens were obtained near North Shields in 1883, but a comparison of the references given ('Naturalist,' 1886, p. 238, and 'Zoologist,' 1883, p. 295) will show, I think conclusively, that both these notices relate to the same animal. This, therefore, will reduce the number of occurrences for Northumberland, as given by Mr. Harting, to two individuals since the year 1871. In addition to these I may mention, in reference to the newspaper cutting quoted by Mr. Yellowley ('Naturalist,' 1886, p. 238), but passed over by Mr. Harting, no doubt as 'insufficient evidence,' that I have seen the specimen therein referred to, and there is no doubt either as to its correct identification or as to the trustworthiness of the record. It was a fine male, in capital condition as to fur and otherwise, and was caught in an ordinary steel rabbit-trap upon the banks of the River Breamish, in front of Harehope Hall, in the parish of Eglington, Northumberland, on the 28th May, 1883, by a son of Robert Hedley, the then gamekeeper upon the estate. I saw it in Hedley's possession shortly afterwards, and had from him full particulars of its capture. It was stuffed and set up by Andrew Hall, an old mole-catcher, resident in the locality, who practises as the local taxidermist; and, like most of the specimens I have examined, it has the breast of a dirty white, stained as it were with reddish buff, rather than of a yellow colour. No other example was known to have been killed or seen in the district for very many years previously, and speculation was rife, amongst the neighbouring gamekeepers and others, as to where this solitary animal could possibly have come from. The close proximity of the Cheviot Hills, however, and such sanctuaries as Chillingham Park (distant little more than a couple of miles from Harehope as the crow flies), as well as the extensive tracts of moorland and plantation which abound in the neighbourhood, may be taken as the natural explanation of the mystery with which its appearance was regarded; while the travelling capabilities of the Marten are

too well known to require further comment. Nevertheless, with the universal practice of trapping (here very fully developed), and the close attention paid to all so-called 'vermin' by the game-preservee, it must be a matter of extreme difficulty for any foot-footed animal to escape detection, and there can be no doubt that even in the wildest parts of the county the poor Marten is on the verge of extermination, if indeed it has not already been eradicated. The almost simultaneous occurrence of two individuals in a country where they had become practically unknown is very curious. The North Shields example was trapped on 23rd May, and that at Harehope just five days later. As already mentioned, the latter was a male, and it would be interesting to know if any record was kept of the sex of the other.

"In the mansion of Eglington Hall, so long the seat of the Ogle family, and which adjoins Harehope, there is an ancient specimen of the Marten, preserved along with a Polecat, and some other *feræ naturæ* now extinct, or become very rare, in the district. This was doubtless killed in the vicinity at a time when these animals were still denizens of the neighbouring woods, but wherever a stuffed specimen now exists in the county it is looked upon as a 'rare beast'; though so comparatively short a time ago, as in 1863, Messrs. Mennell and Perkins, in their 'Catalogue of the Mammalia of Northumberland and Durham,' quoted by Mr. Harting, were able to write of this species, 'Although it cannot be called common, it is widely distributed over both counties.'

"In the 'Proceedings of the Berwickshire Naturalists' Club' (vol. vii. p. 505), the late Mr. Andrew Brotherston, of Kelso, recorded that on the 6th July, 1871, he and a friend saw an animal, upon the English side of the Cheviot Hills, which they 'were almost certain was a Marten.' It came from amongst the masses of loose stones below the cliff in the Bizzle (a rocky gorge running almost to the summit of the highest peak of the Cheviots), and made off across the hill; and there is no reason to suppose that so good an observer as Mr. Brotherston was likely to be mistaken in his surmise as to its identity. Another 'strange animal,' which was reported to me as having been seen near Twizell House, the residence of the late Mr. P. J. Selby, in 1884, it seems not improbable may have been of this species; but I have no other note of any recent occurrence in Northumberland.

Few of even the oldest keepers can remember ever to have seen one alive, and those who do generally wind up with some such remark as 'forty or fifty years ago I killed one, but with the steel traps we have long since cleared off all such vermin as that.'

"Some bones of the Marten were identified amongst those of the Red-deer, the Badger, the Great Auk, and many others, which were taken from the caves at Whitburn Lizards, in 1879, and sent to the Newcastle Museum by Mr. John Daglish ('Natural History Transactions of Northumberland and Durham,' vol. vii. p. 363); but this, though very near the boundary of Northumberland, is upon the Durham side of the Tyne. While, though rather foreign to the subject of this note, it may not be out of place to mention that two very good specimens in my possession were killed near Cark-in-Cartmel, Lancashire, in 1884 and 1885.

"Before concluding, I would point out that, owing probably to a *lapsus calami*, the Marten referred to by Mr. Harting as having been 'killed' on the North Tyne, in July, 1871, will be found, on turning up the reference given ('Naturalist,' 1886, p. 278), to have been only 'seen' by a gentleman while fishing, but fortunately allowed to escape." We have since received confirmation of this from a relative of the gentleman referred to. The animal was seen to come down to the river and swim freely across of its own accord, that is, without being chased; showing that the Marten, like the Squirrel, although so arboreal in its habits, is by no means averse to water.

LINCOLNSHIRE.—Mr. A. E. Staniland, of 31, South Eaton Place, S.W., writes:—"In your list of Martens killed in Lincolnshire, I see there is not recorded one that was killed in Witheall Brackens, near Louth, some time in the seventies (I forget the exact date). It is now in the Oxford Museum. With regard to the Polecat, although it has become much rarer within the last few years in the east of the county, two have come to my knowledge as being trapped within the last month or two."

SUFFOLK.—Mr. G. T. Rope, of Leiston, calls attention to the omission from the last article of the following note which appeared in 'The Field' during the year 1889:—"A male specimen of the Pine Marten was shot on May 29th (1889) in a Scotch fir plantation at Sutton, near Woodbridge, by the head keeper to Mr. Burness, and is now in the hands of Mr. Aston, of Wood-

bridge, for preservation. It measured 27 inches in length, and weighed a trifle over 4 lbs. The keeper informs me that another was seen, no doubt the female. The one killed was carrying a full-grown young wood pigeon. — CHAS. E. FISHER (Supt. of Police).'

"The editorial footnote to this communication, expressing regret that this animal, now so rare, should always be destroyed whenever met with, probably represents the feelings of most readers of 'The Zoologist.' Indeed, the only wonder is that every possible effort was not made to protect it. This applies, too, with greater force if the second Marten reported to have been seen was indeed a female; as, from the secluded and wild character of that part of the country, it seems not unreasonable to suppose that they might have bred there. Though this particular Marten had in all probability escaped from confinement (perhaps in some travelling menagerie),* it would, I think, be difficult to find a district in the eastern part of the county of Suffolk apparently better suited to the habits of this beautiful animal. The parish of Sutton forms part of a wild heathy tract, bounded to the southward by the wide estuary of the River Deben, and abounding with fir-woods, some of them (as, for instance, Tangham Forest) of considerable size. At no great distance, too, is that small but magnificent bit of ancient woodland, Staverton Park, believed by some to be a veritable remnant of the primæval forest with which so large a proportion of our island was once covered. It would be hard (barring its limited extent) to imagine a more secure retreat for such an animal as the Marten than would be afforded by the many immense hollies and patriarchal ivy-clad oaks of this wood. Nature, indeed, seems here to have had her own way entirely, and for ages trees appear to have sprung up, grown to maturity, and at length died of sheer old age, without man's interference. Among the deep gloomy recesses of this old-world wilderness one might well imagine even the wolf still to lurk.

"My father remembers having seen, when a boy, an occasional Marten nailed up on a barn. This was near Ubbeston,

* We do not think this at all likely; not only because *two* were seen, but also because, so far as our experience, the Marten is not an animal usually procured and exhibited by owners of travelling menageries.—ED.

where was a large wood, then unpreserved, which also, in his recollection, not unfrequently held Polecats.

“It is a sad fact that there are so few English landowners who seem to take any interest whatsoever in the preservation of our few remaining wild animals, or who, like the late Charles Waterton, take more delight in attracting the living creatures about them, and studying their habits, than in securing stuffed specimens for a collection. If here and there the owners of a few adjoining estates would combine in affording protection to such creatures as the Badger, Marten, Otter, and the rarer birds of prey, particularly Owls of all kinds, surely something might even now be done at least to retard the inevitable extermination to which some of them are otherwise doomed.

“The particularly interesting account given in ‘The Zoologist’ for 1888 (pp. 6, 7), of the establishment of a thriving colony of Badgers in Leicestershire, shows that the reintroduction of that animal, at least in favourable localities, is quite possible; and I cannot but think that where large woods are numerous and not much disturbed, the Marten too might hold its own, if turned down at a season when food is plentiful, as in June or July. The chief drawbacks to the experiment would probably be the wandering habits of this animal, and the misdirected zeal of the “collector”. The difficulty of procuring live Martens for this purpose from the Continent would, perhaps, be considerable, but the experiment would, I think, be far from impossible. I once saw a freshly-killed Marten at the shop of a Woodbridge birdstuffer (since dead) named Heffer, who told me it had just been brought over in a yacht from Norway.”

BEDFORDSHIRE.—Mr. J. Steele Elliott, of Sutton Coldfield, noticing the absence of any records of the occurrence of the Marten in Bedfordshire, has been good enough to forward a copy of a long letter from “an old keeper of 45 years’ standing,” which appeared in ‘The Field’ of 5th May, 1859. From this communication, which is too discursive to print in its entirety, I make the following extracts:—“Martens are fond of large and old woodlands; their resort is the hollow old doddrel trees, in holes made by Woodpeckers,* sometimes in Kite’s or Magpie’s

* This must surely be a mistake. We never saw a hole made by any Woodpecker that was large enough to admit a Marten, or even a Squirrel, though we are well aware that this is not the first time the statement has

nests. I consider the Marten-cat one of the quickest animals we have; much sagacity, very shy, quick as lightning (the Squirrel I consider only second to the Marten-cat). My practice was to start and be in the coverts at daybreak, placing my guns (from knowing the likely trees in the woods) in different directions. Then I proceeded with my two couple of fox terriers, and if a 'cat' was in the covert it was sure to be found. One fine morning early, about forty years ago, I wended my way (with other keepers) to a celebrated wood, called Odell Wood, in Bedfordshire, where the Hon. Grantley Berkeley hunted the Oakley country (many a good day I have had with him; he knew Odell Wood well, a favourite woodland covert). Shortly after entering we got on a drag of a Marten-cat (my terriers never deceiving me). It was soon on its legs from tree to tree: scent glorious. Having killed 'cats' in the neighbourhood before, I knew the places of resort; made my way to an old favourite ivied tree, an old doddrel (as they are called in this part of the country), planted myself with my back against the oak, having the wind in my favour. After running the 'cat' for upwards of two hours (it having evaded the guns), up it came to the tree I expected: gun up immediately, but before I could take aim, I lost sight of it. My suspicions caused me to ascend the tree: looking into a Woodpecker's hole [?] and listening, heard a noise. My conclusion was the 'cat' was there. How to get it out was a consideration. That difficulty I soon surmounted; first I gave the 'view-halloo,' stopped the hole up with my handkerchief, kept the terriers at bay; off with my fustian jacket, tied up the cuff of the sleeve, put the shoulder part to the hole, and tapped the tree. Out came the 'cat' into the sleeve; tied that up, and gave it as security to one of my men for the purpose of bleeding my terriers. But curiosity led me to look into the hole, when something hissed and spat at me. I began to cut the tree (having got a hatchet), and found to my delight four kittens.* Suspecting the old 'cat' was a vixen from her shaggy fur, I took

been made. Pennant, in his 'Caledonian Zoology,' says of the Pine Marten that it is "found in pine forests, and takes possession of the holes made by the Woodpecker." But see Mr. Harvie Brown's commentary on this passage ('Annals of Scottish Natural History,' vol. i. (1892), p. 16).—ED.

* A cavity large enough to contain a full-grown Marten and four young ones could hardly have been the hole of a Woodpecker.—ED.

them all home, put the kittens in a corn-bin, and chained the old one up. She brought them up to full-grown. From handling them (separated from the old one, which I could never tame), I got the kittens as quiet and docile as the cats in our house. One I kept for years, the others I gave away."

GLoucestershire.—In the anonymously written 'Journal of a Naturalist,' by Mr. Knapp, of Thornbury, Gloucestershire, published in 1830, the following observation is made with regard to the Marten (p. 139):—"The Marten lingers with us still, and every winter's snow becomes instrumental in its capture, betraying its footsteps to those who are acquainted with the peculiar traces it leaves."

In the 'Annals of my Village' (Sheepscombe), by Mary Roberts (1829), the Marten, Polecat, and Weasel are mentioned (p. 84) as "occasionally seen in our woods"; and at p. 87 of the same work the following statement occurs:—"In looking over some memorandums (*sic*) for this month (April) I find that a brood of six young Martens were found in a hollow tree among the Ebworth Woods, near Painswick."

Mr. C. A. Witchell, of Stroud, writes that he was informed by Mr. J. Scott Haywood, of Frocester, that in a large aviary some years ago he kept a Marten which had been caught by a keeper at Berkeley. He adds that Mr. Burgh, of Cheltenham, when fishing near Frog Mill in that neighbourhood some years since, saw a Marten run along the side of the brook, and noticed that it was "a very ragged specimen."

Mr. W. B. Strugnell, of Stroud, saw one which had been shot ten years since (1881) in the Forest of Dean, and had been set up by the late Mr. White, taxidermist, of Cheltenham. He also, with Mr. Burgh, saw, at Mr. White's, another specimen, which was well known to have been shot at Chickley Hill, near Cheltenham."

(To be continued.)

NOTES ON MARINE MOLLUSCA COLLECTED ON THE
COASTS OF DONEGAL AND DUBLIN.

BY H. CHICHESTER HART, F.L.S.

(Continued from page 56.)

Order PECTINIBRANCHIATA.

Patella vulgata, Linn.—Dublin and Donegal, common. Var. *depressa*, Melmore, Mulroy, Donegal; Howth, Dublin.

Helcion pellucidum, Linn. (*Patella*).—Dublin and Donegal, frequent. Var. *lævis*, Howth and Portrane, Dublin.

Tectura testitudinalis, Müll. (*Acmæa*).—Dublin: Ware Hole, Howth. Donegal: Mweelfinn, Sheephaven, rare.

T. virginea, Müll. (*Acmæa*).—Dublin: Howth, Ware Hole. Donegal: Mweelfinn, Sheephaven; alive at Drimnacraig, Fanet.

Emarginula fissura, Linn.—Dublin: Portrane, Portmarnock, and Howth. Donegal: Mweelfinn, Sheephaven; McCamish and Drimnacraig, Lough Swilly.

Fissurella græca, Linn.—Dublin: Howth and Portmarnock, rather scarce. Donegal: McCanish, Melmore, Mweelfinn, Dunfanaghy, and Kinnegar; more frequent in the northern county. Derry: Magilligan.

Capulus hungaricus, Linn. (*Pileopsis*).—Dublin: fresh specimens at the Velvet strand, Portmarnock, but scarce. Down: large living specimens trawled at Carlingford. Derry: Magilligan (Miss H. Galway).

Cyclostoma serpuloides, Montagu (*Skenea*).—Dublin: Kosh, Howth.

Trochus magus, Linn.—Dublin: Portmarnock and South Bull, but rare. Donegal: Inch, Lough Swilly; Melmore, Mulroy.

T. tumidus, Montagu.—Dublin: Portmarnock and South Bull, rare on the strands.

T. cinerarius, Linn.—Dublin and Donegal, common.

T. umbilicatus, Montagu.—Dublin and Donegal, common.

T. duminyi, Requier.—Donegal: Bundoran. I have not gathered this, and I mention it because, in speaking of Donegal shells, it seems wrong to omit a species which has no other British habitat.

T. montacuti, W. Wood.—Dublin: Portmarnock, a single specimen.

T. granulatus, Born.—Donegal: Kinnegar, Lough Swilly, *vide* Mr. T. Batt. of Rathmullan, who showed me specimens.

T. zizyphinus, Linn.—Dublin and Donegal, frequent.

Phasianella pulla, Linn.—Dublin and Donegal, frequent.

Lacuna divaricata, Fabr. (*L. vineta*, F. & H.).—Dublin and Donegal, frequent.

L. puteolus, Turton.—Dublin: Ware Hole, Howth. Donegal: Mweelfinn, Sheephaven, and near Dunfanaghy.

L. pallidula, Da Costa.—Donegal: near Dunfanaghy and at Mweelfinn, Sheephaven.

Littorina obtusata, Linn. (*L. littoralis*).—Dublin and Donegal, common.

L. rudis, Mahon.—Dublin and Donegal, common.

L. litorea, Linn.—Dublin and Donegal, abundant.

L. neritoides, Linn.—Dublin, frequent.

Rissoa parva, Da Costa.—Dublin and Donegal, abundant.
Var. *interrupta*, common.

R. membranacea, Adams (*R. labiosa*).—Dublin and Donegal, frequent.

R. striata, Adams.—Dublin: Portmarnock, common. Donegal: Inch, Lough Swilly, frequent. I have gathered other *Rissoæ* at Inch Island, Lough Swilly, and at Portmarnock, but have not had them identified to my satisfaction. Inch, I should say, is an excellent hunting ground.

Hydrobia ulvæ, Pennant.—Dublin and Donegal, common.

Barleeia rubra, Montagu.—Dublin, one specimen at South Bull. Donegal, found at Bundoran by Jeffreys.

Homalogyra rota, Forbes & Hanley.—Dublin: Howth (Kosh). It has been taken in Donegal by Mr. Warren and Mr. Barlee (Forbes & Hanley).

Cæcum trachea, Montagu.—Dublin: Portmarnock.

Turritella terebra, Linn.—Dublin, very common; and up the east coast to Derry, where it is particularly abundant at Lough Foyle. In Donegal it is quite scarce; near Melmore (Mulroy) I have gathered old specimens. Its distribution, with regard to Donegal, is similar to that of *Cyprina islandica*. Either Lough Foyle, or the northernmost headland, Malin Head, or the two combined, forms an important biological boundary.

Scalaria communis, Lamarek.—Dublin: South Bull and Portmarnock, scarce. Derry: Magilligan (Miss H. Galway).

Donegal: Kinnegar strand, Rathmullan, Lough Swilly, but very scarce.

S. turtoni, Turton.—Dublin: Portmarnock.

Aclis unica, Montagu.—Dublin: Portmarnock strand, opposite Baldoyle.

Odostomia.—I have not ventured to determine the minute species of this complicated genus. *O. plicata* occurs at Portmarnock, and I have found some at Inch Island in Lough Swilly. But they seem to be very scarce in the northern waters, as compared with Dublin Bay.

(To be continued.)

NOTES AND QUERIES.

Albinism in Birds and Mammals.—Adverting to my note in ‘The Zoologist’ of last year (p. 358), on the subject of the colour of the iris in albino birds, I have delayed replying to my critics until after the Bird Show at the Crystal Palace; this has now taken place, and I trust you will allow me to renew the discussion. I am very much obliged to all those who have kindly assisted me in furnishing information on the subject, both in print and in private communications, and especially to Mr. Edgar R. Waite, who has evidently taken considerable trouble in the matter. To those who hold the view that unless an animal has pink eyes it is not an albino, it is useless for me to bring forward any arguments; but I notice that Mr. Aplin appears to admit the probability of some albinos having other than pink irides, by using the words “almost always” in his communication (Zool. 1891, p. 426). The Greenfinch and two Budgerigars, mentioned by Mr. Verrall as having pink eyes, were certainly not albinos. I have a perfect recollection of having seen the three birds in question, and they were what I should term xanthous varieties. It is clear also that there is a difference of view as to what constitutes a pink eye. Mr. Verrall, whose opinion I value highly, states that there were no true albinos exhibited at the last Crystal Palace Cage-bird Show, and Mr. William Ingram states of albinos he bought “one Blackbird and a Hedgesparrow at that show” (*l. c.* p. 426). The following albino birds were exhibited at the Crystal Palace Show which was held at the end of February and beginning of March last:—a pure white Blackbird; legs pink; eyes the colour of a dark carbuncle in the pupil; iris slightly blue. A pure white Starling; legs and beak pink; eyes dark. A pure white Jackdaw; legs pink; beak with a very slight dark streak; eyes blue. Six Java Sparrows, all as white as snow; legs and beaks pink; eyes of the normal dark colour. Four white Doves, *Turtur risorius*,

absolutely free from a trace of colour; but the eyes normal. With regard to the last-named birds, Mr. Blagg, of Cheadle, who breeds them, has furnished the following information, which I give in his own words:—"In the white *Turtur risorius*, the young have a pale bluish grey iris, with a dark red pupil; the adults have dark red iris, with practically black pupil, as have the ordinary *T. risorius*. The white *T. risorius* has a light pink beak in place of the dark beak of the ordinary variety." It will be seen that the albinism of this species does affect the colour of the eye in the young, but not in the adult. I by no means deny that some albino birds belonging to certain families have pink eyes, but certain other albinos are not so distinguished. For instance, Mr. Blagg informs me that at a poultry and bird show at Cheadle there was exhibited "a white Blackbird, a pure albino, every feather white; legs light flesh-colour; beak and eyelids yellow; eyes (pupil and irides) pink as in white rabbits." Mr. Farn informs me that he obtained last year a young white Coot, the eyes of which were pink. The object I had in view in writing my previous note on this subject was to controvert the statement that "the eyes are pink in all albinos." This, I am quite convinced, is not the case. There are two well-known varieties of the Common Duck, both white; one, the little white "call-duck," with bright yellow beak and legs, which I do not consider an albino; and the other, the "Aylesbury," which is perfectly achromatic—feathers, flesh, beak, legs, and even eggs, all pure white—and, I take it, must be an albino; but the eyes are of the normal colour. Then amongst common fowls there are pure white ones which are not albinos, the colour of the legs showing that they are not so: but there are others entirely without colour, which nevertheless have normal eyes. In the case of the Common Pigeon there are also white birds which I do not regard as albinos, and others that, in my opinion, as certainly are so. Take one variety as an illustration: a "Blue Dragon" has rich reddish ochreous-coloured eyes; the pallid forms, such as the "Yellow" and "Silver," have much paler-coloured eyes, but in the albino the eyes are the colour of a dark carbuncle. In breeds where this dark eye is a defect, birds are bred which in the nestling plumage show traces of colour and have normal eyes, and yet in a moult or two become white. This fact of birds changing to white with age is not uncommon. I have known of black pigeons and black poultry becoming in a single moult pure white, so far as the feathers were concerned; and in some black ducks I have observed the same change taking place, but spread over several moults. This Mr. Verrall and I have both observed at Lewes. *Cygnus immutabilis* is usually considered an albino of the Common Swan, but its eyes are not pink. With regard to albino Mammals, I should certainly not consider any species of the *Rodentia* to be an albino unless it had pink eyes—at least I have never seen an exception. Indeed, amongst the species of this order it is not unusual to find partially pied

varieties with pink eyes. The breed of rabbits known absurdly as "Himalayas" have dark-coloured nose, ears, feet, and tail; yet the eye is pink. The Cavy, which belongs to such a totally distinct family, marked in the same manner (with the exception, of course, of the tail), has likewise pink eyes. There are several of this variety at present in the Zoological Gardens. Amongst the *Mustelidæ*, *Procyonidæ*, and *Ursidæ*, the pink eye is always, so far as I know, correlated with albinism. There is at present in the Zoological Gardens, Regent's Park, a Raccoon purely white, with eyes as pink as those of a white rabbit or mouse. I have never myself seen any of the *Canidæ* or *Felidæ* with pink eyes, though I have acted as a judge of cats for twenty years. I must have seen many hundreds of albino cats. These had either yellow eyes (and were perhaps only white cats) or pale blue eyes, which I consider indicate, in cats, pure albinos. Albinism is no doubt a defect, and white cats with blue eyes are very often perfectly deaf. Occasionally one is exhibited with odd eyes—*i. e.* one blue and one yellow. With the *Equidæ* it is, I believe, a fact that some of the Royal cream-coloured horses, which are clearly not true albinos, have pink eyes, and my brother, Harrison Weir, tells me that he has seen a white horse with pink eyes. To conclude, I hold that albinism and pink eyes are not always correlated; that pink eyes are found in other than albinos; and that there are pure albinos which have not pink eyes.—J. JENNER WEIR (Beckenham, Kent).

MAMMALIA.

The Gisburne Herd of Wild White Cattle.—The Wild White Cattle formerly existing at Gisburne in Craven seem to have had the same tendency to produce flecks of colour on the head and shoulders which is observable in all the surviving herds. The stuffed cow in the Owens College Museum at Manchester has several small roan-coloured spots on the cheeks and neck, and others on the flanks. This animal was described by the late Mr. Storer as having the ears white inside and out. Time and ungentle usage have left but little hair on the ears at all, but what remains is distinctly red. When Mr. Storer saw this specimen it was probably in one of the badly lighted rooms of the old Museum, and the coat had become so dirty in the Manchester atmosphere that these details no doubt escaped his attention.—CHAS. OLDHAM (Ashton-on-Mersey).

Earliest use of Foxhounds.—With reference to your remarks on the earliest Foxhounds in the West of England (Zool. 1891, p. 325), I think the following extracts may be of interest:—'Historical MSS. Commission,' Twelfth Report, Appendix ix. p. 67. The Marquis of Worcester to the Marchioness, Nov. 15th, 1677:—"Wishes he had fox hounds to spare, as the Prince of Orange is mighty desirous to get a good pack, and has asked for some." P. 67, the same to the same, Jan. 24th, 1678:—"I do not

think I shall lend (or send) the Prince of Orange any hounds, therefore Duke need not covet to get any more." P. 75, the same to the same, Dec. 5th, 1678:—"The hounds the Duke names, will not—according to their character—be proper for Lord Salisbury, he having nothing but buck and hare. Therefore I would have him propose some harriers, my Lord says he cares not what colour, therefore if the reddish dogs be good harriers they will be proper, &c."—H. A. EVANS (United Service College, Westward Ho, N. Devon).

Natterer's Bat in Notts.—In June, 1888, a specimen of this bat, in my possession, was picked up dead, under an old hollow walnut tree here. In the article on this species in 'The Zoologist' for 1889 (p. 247), Nottingham is noted as one of the counties from which, up to that time, it had not been recorded.—L. BUTTRESS (Grove, near Retford, Notts).

BIRDS.

Ornithological Notes from Scarborough.—During the last few weeks several birds have been obtained at Scarborough, the occurrence of which it may be of interest to note. On Dec. 19th an immature specimen of the Eider Duck, *Somateria mollissima*, was shot at the Castle Foot. It was one of four which for several days before had haunted the locality. They were generally seen in the early morning, diving in search of food, about 150 yards distant from the edge of the rocks, and, although many shots were fired at them, they remained about until this one was shot. The survivors have not since been seen. On January 18th a female Rough-legged Buzzard, *Buteo lagopus*, was shot at Scalby. It was in immature plumage, and measured $4\frac{1}{2}$ feet in expanse of wing. Harassed by a number of Crows, it took refuge in a tree close to a farmhouse, where it was approached without difficulty, and shot. The stomach on dissection proved to be empty, although the bird was plump and fat. On Jan. 20th a mature specimen of the Eared Grebe, *Podiceps auritus*, was shot on the north shore whilst diving about in a large pool in the rocks. This bird and the Eider Duck before mentioned have been preserved for the local Museum. Many Swans have been seen lately, but not sufficiently near for identification. The majority were passing in a northerly direction, at an altitude of about 200 yards.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

Bullfinches in Kensington Gardens.—I saw last autumn (1891) a Bullfinch feeding upon the buds of an almond tree in the flower-walk close to Kensington Gardens. I noticed that it was very tame, and enquired of the park keeper if he knew whether it were an escaped bird or not. I then heard the following curious story, since which I have ascertained is perfectly true:—In the summer of 1890 a gentleman returning from Siberia brought back with him a pair of Bullfinches, *Pyrrhula major*. He kept

them in his rooms at Westminster, and one day the cock bird escaped, and in consequence the hen was liberated, and soon joined him. They found their way through St. James's and the Green Parks to these Gardens, where the owner saw them, and identified the cock bird by the tune he had taught him to whistle. The pair remained in the Gardens all through the bitter winter of 1890-1, and brought off four young ones in the spring, and it was one of these which I saw. I was immediately struck by the size of the bird; and I cannot help thinking that if any of these had been killed in the home counties, and sent up for identification, *P. major* would have been recorded as an occasional visitor to this country.—W. H. TUCK (Tostock House, Bury St. Edmunds).

Buffon's Skua and Bittern in Devon.—The Long-tailed or Buffon's Skua is a rare visitor to Devon, having been obtained hitherto on two occasions only. The last recorded example was shot in June, 1860, on the South Devon coast. In October last two immature specimens of this Skua were obtained near Exmouth, both of which I had the pleasure of examining. On the 14th of the same month a small flock appeared on Thurlestone Sands, South Devon; several of these were shot, the majority of which proved to be immature birds. A Bittern was shot near Exeter during the first week in November last, and was submitted for my inspection by Mr. Truscott, of Exeter, who had received it for preservation.—W. E. H. PIDSLEY (Exeter).

Supposed Hybrid between Song Thrush and Blackbird.—I have recently obtained a bird which may possibly be a hybrid between *Turdus musicus* and *T. merula*. It was brought to me in the flesh on Oct. 23rd, 1891, having just died in a cage. In July of that year it was taken, with other young birds, from a nest near Bodicote, and it passed to another owner during the early autumn. The other birds in the nest were normal Song Thrushes. One of them, I am told, is living in Banbury now, and is a normal Song Thrush (or as my informant, the late owner of the supposed hybrid, says, "a common Whistling Thresher"), and sings the Thrush's song. The present bird had, its late owner avers, moulted before it came to him in the autumn (he saw it in nestling dress); but its tail being much broken, he pulled out the stumps of the feathers, and a new tail, about an inch long, had grown at the time of the bird's death. I am, however, inclined to think it had never shed its wing-quills, or those of its tail until they were pulled out. The small feathers of the head and body are, no doubt, new, although some of the wing-coverts are still marked. But the late owner assures me its first dress was very dark also, quite as dark as that assumed at the moult in fact. He called it a curiously coloured Thrush; said it sang beautifully—the Thrush's song; and when I suggested a relationship to the Blackbird he smiled at the idea. However, when I took it to a birdstuffer to skin for me, and asked him what it was, he looked

it carefully over and said it was a Blackbird! The general look and "cut" of the head is that of a Blackbird, although it is smaller. Its bill is slightly longer and larger than that of the Song Thrush (it looks more so than the foot-rule shows it really is), and much darker in colour, approaching in this respect that of a young Blackbird. The tarsi are very slightly stouter than those of a Song Thrush; they are very light-coloured, but the legs of cage birds reared from the nest are apt to exhibit this peculiarity. Irides dark brown. Upper mandible dark horn; under mandible with sides dull pale pink, rest dark horn. Gape very pale yellow; inside of mouth flesh, with strong tinge of pale yellow. Legs dull pale flesh. Top of head and upper parts umber-brown, a greyish tinge on some of crown feathers. Ear-coverts dark brown. From the nostrils round gape and over eye, taking in lores, nearly black. Oval patch on chin, and upper throat, pale drab. Throat, front of neck, and upper breast, nearly black. Sides of neck brown, this colour running into the black in places. Feathers of lower breast and belly nearly black, with narrow edging of light buffish white. Lower belly pale drab to dirty white. Under tail-coverts brown. Tail brown. Wing-quills hair-brown on outer web, rest dark brown. Coverts light brown, marked irregularly with yellow-buff and nearly black. I dissected the body, which seemed healthy. There is, of course, a possibility of the bird being merely a melanitic variety of the Song Thrush, but it is not only in colour that it differs from the type of that species; the slightly larger beak and slightly stouter tarsi, and the general resemblance of the head—in shape as well as colour—to that of a Blackbird, must be taken into account. Upon the subject of the interbreeding of the Blackbird and Song Thrush, readers may be referred to two papers by Mr. Miller Christy, in the 'Transactions of the Norfolk and Norwich Naturalists' Society,' in which records of all the supposed instances have been brought together and discussed.—O. V. APLIN (Bloxham, Banbury, Oxon).

Birds of the Isle of Man.—In Mr. Ralfe's list (pp. 93—100), the Chiffchaff, amongst other species, is stated to be absent from the Manx avifauna; so I presume that it is excluded also from Mr. Kermodé's list. On April 18th, 1882, I heard and saw a Chiffchaff in full song in the Nunnery Grounds, near Douglas. I also recollect being told by my brother, Mr. John D. Moffat, in the spring of 1874, that he had heard one in a glen near Bemahague. As to the Blue Titmouse, also omitted from the Manx list, this, I am sure, is merely a case of extermination within recent years. Mr. J. D. Moffat occasionally saw this bird in the neighbourhood of Onchan between 1872 and 1874. The Bullfinch, referred to among the birds which are "either very uncommon or of exceptional occurrence," is, I believe, still resident in the island. One was seen near the Isle of Man Asylum in 1887 by Mr. Hugh H. Moffat, as he informed

me by letter. He particularly noted the circumstance, for previously to seeing it he had been informed that the Bullfinch was extinct in the island. Mr. Ralfe does not mention the Kingfisher, which is occasionally seen on the island burns, nor the Twite, of which specimens obtained in June were sent from the Isle of Man by Mr. J. F. Crellin to Mr. A. G. More, as mentioned by him in 'The Ibis,' 1865, p. 130. The Golden Plover I have seen near Castletown quite early in August, in which month also the Wheatear is often exceedingly abundant along that part of the coast. In August, 1880, I saw the old racecourse and the sward of Langness literally swarming with Wheatears. On the same occasion some Wild Ducks (a species not mentioned by Mr. Ralfe) were seen by me on the Silverburn; so tame, that I mistook them for the domesticated variety until they surprised me by taking flight. On the 12th September, 1891, I saw hundreds of Pied Wagtails (in immature plumage) haunting the margin of Castletown Bay; I had seen no such hosts of them in Ireland since 1874. Among other common birds not mentioned by Mr. Ralfe, I may remark that the Golden-crested Wren thrives in sheltered localities; the Common Wren, though somewhat inhospitably scheduled as "Partially Destructive" in the insular Wild Birds Protection Act, still holds its own; the Starling has, I think, greatly increased of late years; and the Whitethroat, Willow Wren, Cuckoo, and Corncrake are well-known regular summer visitors.—C. B. MOFFAT.

Rough-legged Buzzard in Hants.—On Nov. 17th, 1891, Mr. Fisher saw a large hawk about three and a half miles from Winchester, and on the 14th February last he and I saw a large hawk near the same place, which we took to be a Buzzard. It was circling over a rabbit-warren, in quest, I suppose, of rabbits. The place is very bare and flinty, a grey lichen and little groups of stunted elder trees being the only vegetation. On March 13th we were walking over the warren, when we saw a large hawk flapping its wings on the ground under an elder tree. It proved to be a Rough-legged Buzzard (*Buteo lagopus*), caught by the left leg in a large gin baited with a rabbit; its claw hung by a piece of skin only, the leg having been broken clean below the so-called knee-joint, and the poor bird must have been in the trap for over 24 hours. Setting aside the cruelty of trapping these birds, surely it is unmerciful to leave them so long in the gin. As it was Sunday, it would probably have remained in for another twelve hours till Monday morning. We bandaged up the wounded leg, and are keeping the bird in hopes of its recovery. The measurements are—across the wings, 48 in.; total length, 21 in.; from which somewhat small dimensions, compared with those given in 'Yarrell,' I should infer that it is a young male. This is the first occurrence, I believe, of this species observed near Winchester, though one was seen round Stockbridge in February last.—SUTTON A. DAVIES (Winchester).

White Wagtail in North Wales.—A noticeable feature in the spring migration of 1891 was the abundance, in this district, of the continental White Wagtail (*Motacilla alba*). The first bird of this species I noticed was feeding on a freshly-ploughed field, in company with about a dozen of the common species (*Motacilla lugubris*), on March 4th, all apparently males, and no doubt a migratory party. I did not see another till April 5th, when one appeared by a farmyard pond, and another—or perhaps the same bird again—on a neighbouring marsh. At dusk, on April 9th, with a strong E. wind, I observed an immense assemblage of Wagtails on a muddy backwater on the Carnarvonshire side of the River Glaslyn. The light was too bad to distinguish the species, but I believe this flock contained several White Wagtails. I visited the spot early the next morning, but the party had passed on, and not a single bird was to be seen. On the 20th, with a light E. wind, two White and several Pied Wagtails appeared along the banks of the Glaslyn. On the 21st there were quite a dozen White, with a few Yellow, and many Pied Wagtails at the same place. On the following day both species had considerably increased, and I saw quite a score of White Wagtails, but no Yellow ones. The next day (23rd) my brother saw about half-a-dozen on the edge of Llyntecwyn. On the 24th they were still numerous along the Glaslyn, and continued so till the 27th, on which day the numbers of both species had considerably decreased, the strong E. wind, which had been blowing since the 21st, having gone down. I did not visit the marsh again until May 2nd, when the White Wagtails had entirely disappeared; but on the following day I saw a single bird on the Port Madoc embankment.. A very large majority of both species appeared to be males. The White Wagtails were decidedly wilder than the common ones, and their note seemed to me to differ; indeed, I should have overlooked those seen on April 20th, if this difference had not drawn my attention to them. This Wagtail is a rare bird in the district, though probably, if the large flocks of migratory Wagtails which pass through every year in March and April were carefully examined, it would be found to be of annual occurrence.—G. H. CATON HAIGH (Aber-iâ, Penrhyndendraeth, Merionethshire, North Wales).

Hybrid Teal and Wild Duck.—In the March number of 'The Zoologist' (p. 109) I noticed a hybrid between a male Teal and a female Wild Duck, which had been lately shot in Anglesea. In the editorial note appended thereto it is stated that this is the hybrid figured in the earlier editions of Yarrell's 'British Birds' under the name "Bimaculated Duck." But, upon referring to the latest edition of that work (vol. iv. p. 389), I find that Mr. Hancock was "convinced that the so-called Bimaculated Duck is a hybrid between Teal and Wigeon." The bird I examined in Mr. Small's shop in the flesh was distinctly, to the utmost of my belief, a hybrid—as I stated—between the Teal and Wild Duck, and had *yellow feet*, besides the

partially developed upcurving of the central tail-feathers, and the other markings already described by me (*loc. cit.*), which clearly indicate its relationship, however much it might otherwise resemble a Wigeon. Neither the Teal nor the Wigeon has *yellow* feet, but the Wild Duck has, and the cross, or hybrid, which I described certainly had yellow feet. The bird was, I believe, sent to Messrs. Rowland Ward & Co., London. The colour of the feet may have (and doubtless has) faded, but in the flesh they were distinctly *yellow*. Besides, the whole markings distinctly point to the hybrid having been Teal and Wild Duck, as already described, so far as I can discriminate.—J. A. HARVIE BROWN (Dunipace, Larbert, N.B.).

[We examined the bird in question on its arrival in London, and came to the conclusion that Mr. Harvie Brown had correctly indicated its affinities. Whether the so-called "Bimaculated Duck" is a hybrid between Teal and Wild Duck, or between Teal and Wigeon, is another question. The opinion of the late John Hancock is one which must certainly carry weight; but in our opinion the original descriptions by Vigors, who wrote *pedes lutei, membrano in medio nigro* (Trans. Linn. Soc. 1824, vol. xiv. p. 559), and Selby, who described the "legs and feet pale orange" (Ill. Brit. Orn. vol. ii. p. 321), favours the view that the cross was one between Teal and Wild Duck. It is true that they describe the tail as having "the two middle feathers black, narrow, acuminate, and much longer than the rest," in other words, not curled upwards as in the Mallard; but this might depend upon whether the parent Wild Duck was male or female (see 'Yarrell,' 1st ed. 1843, vol. iii. p. 165).—ED.]

Song of the Redpoll.—I can corroborate some remarks under the above heading by Mr. C. A. Witchell (Zool. 1891, p. 398), which has only just been brought to my notice. As a keeper of birds in captivity for twenty years, I can say with the greatest confidence that no person of experience wishing to possess a bird with the natural wild note would ever dream of having a bird from the nest, or a "brancher"; it being well known that young birds imitate the notes, more or less, of the birds that they hear. Birds do not sing, as a rule, till the spring following that in which they were hatched. In Germany young Canaries are "trained" under Nightingales and other birds; the process simply consists of their cages being hung in close proximity to the bird whose song they are wanted to imitate; from all others they are carefully isolated. The natural song of the Canary is loud and harsh in a room, but it does not sound so when the bird is flitting about the orchards and gardens of its native island in the sunshine. Although I tried to avoid buying birds of the year for the above reasons, I once purchased a cock Siskin for breeding purposes, which had the most perfect Goldfinch's song. I was very anxious to see whether the young would follow their parent's song or their own natural song, there being other Siskins in the room; but I regret to say that I failed to breed from him.

To pass from birds in captivity to those at large, there is abundant evidence that wild birds pick up the notes of others, and incorporate them into their own song. Many instances have come under my notice. Some years ago I noticed that the Sky Larks in the Reculver Marshes in Kent introduced into their song the most perfect imitation of the alarm note of the Ringed Plover. The explanation was very simple. The Plovers nested on the top of the sea-wall, which was also used as a foot-path, and, being constantly disturbed, were continually flying round, uttering the alarm note, which the nestling Larks in the adjoining reclaimed fields did not forget. In another case, while sauntering about a rector's garden in Sussex one fine morning in January, I heard the song of the Blackbird, as I thought; but knowing that it was too early for that bird, I quietly approached the songster, and discovered, that it was a Starling. The imitation was almost perfect.—J. YOUNG (64, Hereford Road).

[In Sussex some years ago we repeatedly heard the Sky Larks in the marshes between Pagham Harbour and Selsea Bill, imitating the notes of the Ringed Plover and Redshank, both of which species used to breed there, the former on the great shingle beach, which almost closed the entrance to the harbour (since drained alas!), and the latter in the neighbouring marshes. So perfect was the imitation that it was only by looking for the author of the notes that we were undeceived. In February last, while staying on a visit in North Wales, we were much entertained with a Starling near the house, which not only uttered some of the Blackbird's notes, but, much to our surprise, those of the Curlew also. This was explained by the proximity to the Menai Straits, and to the fact that the Curlews at high-water frequently leave the mud-flats and come into the Park, where we have seen them feeding on the old pasture in flocks of thirty or forty. On being disturbed, their cries would be quite audible to the Starlings near the house.—ED.]

Nesting of the Chiffchaff.—Whilst reading with interest the notes on this subject by Mr. Ellison (*Zool.* 1891, p. 470), and by Mr. Read in your last issue (p. 111), I have been reminded of a case where a Chiffchaff, building in our garden at York, placed its nest in an Austrian pine at least nine feet from the ground, as measured by me at the time. The frail structure was placed at or near the end of a branch among thick foliage. I have also seen a nest in a small cedar tree, elevated, say, 18 in.; but these two instances are the only ones of which I have any note where the nests have been actually off the ground. In our garden, a wonderful variety of positions are sometimes chosen; for example, the midst of a patch of pink, where detection was very difficult, and on the bare ground, where not the smallest attempt had been made at concealment. In most cases the nests are made mostly of dead leaves, but I have noted an instance where moss was the material employed.—J. BACKHOUSE (Harrogate).

Great Grey Shrike in Gloucestershire.—On Nov. 18th last a male example of *Lanius excubitor* was shot at Lower Ginting, in this county, and is now in my hands for preservation.—A. L. CLARKE (Gloucester),

Nesting of the Black Scoter (*Oidemia nigra*) in Sussex.—At last I find time to answer your inquiries relating to the Black Scoter nesting at Earnley Marshes, near Chichester. The brood last year (1891) consisted of seven, and I purposely shot the old drake for my collection. I am sorry now that I did not get any of the young; I could easily have done so. When I first saw them they could just fly, but only a short way. I saw the two old birds off and on all the summer, withing thinking of the probability of their nesting, or caring much about it. In August I flushed the family, and shot the old male. Since writing first I have made inquiries, and find that the Black Scoter nests here every year. I will try to find the nest during the coming season, when you shall hear from me again.—CHARLES FOWLER (South Bank, Chichester). (Communicated by Mr. J. Anderson, Hon. Curator, Chichester Museum).

[This statement is so remarkable that we have applied for further particulars.—ED.]

An Albino Coot.—On June 1st, 1891, I received, in the down and in the flesh, an albino Coot, *Fulica atra*, from the neighbourhood of St. Osyth. It was probably not more than four or five days old. The crimson and yellow hair-like processes on the head were as in an ordinary immature Coot of similar age. The legs were pale orange and the eyes red. With these exceptions the bird was white. Retaining the crimson and yellow on the head appears to me to be a curious circumstance.—A. B. FARN (Mount Nod, Greenhithe).

An unidentified Water-bird.—I should be much obliged if you, or any readers of 'The Zoologist,' could give me an opinion as to the species of a bird I heard and saw on Llangorse Lake, Breconshire, at dusk, on a November evening in 1889. I had just landed from a boat, after a shooting trip round the lake, when I heard a bird-note that was quite new to me. It came from a belt of reeds which fringe the lake near the landing-place, and, on my walking to a point near the spot whence the sound came, I could indistinctly see a small bird swimming among the reeds, but owing to the darkness I was unable to identify it. I could not shoot, as the boatman was in the line of fire, and it soon disappeared among the reeds. The boatman, who was on the water on the lake side of the reeds, had a better view of it, and described it as "a little greyish bird, about the size of a Snipe." The note of this bird resembled the syllable "kik," rapidly repeated about seven or eight times, varied by a clear whistle. I think it must have been one of the small rare crakes, but, according to my bird-

books, no mention of a whistle is made in the description of the note of either the Little Crake or Baillon's Crake. It has been suggested to me that the bird in question was one of the Phalaropes, but I believe the note of this species is very different to that above described. — E. A. SWAINSON (Woodlands, Brecon).

[We should think the bird in question was more likely to have been a Spotted Crake, which looks very small when swimming, owing to the legs being invisible, half the body submerged, and the feathers of the dorsal plumage compactly compressed; but the description given is too vague to warrant any decided opinion as to the species.—ED.]

REPTILES.

Variations of the Viper.—Having at various times kept Vipers—altogether about a dozen—in captivity, I was much interested in Mr. Boulenger's paper (pp. 87—93) on the variations of that species, and I venture to suggest that, in treating of variation in colour, he has not sufficiently taken into account the effect of sloughing. He does not state whether he kept any of his specimens alive, or whether he knew of any of them having recently cast their skins. I have seen a very dusky male Viper (*Pelias berus*) become by this process one of the lightest, its ground-colour being changed to a light stone-grey; and I have also seen a Common Snake (*Tropidonotus natrix*), which was of a mahogany or dull red hue, change in a similar way to a lovely and lustrous green, with every black mark as distinct as though mapped in with printers' ink. Judging by some twenty years' observation of British Vipers, Snakes, and Lizards, both in their wild state and in large cages, I conclude that in all these reptiles, and also in the Slow-worm (*Anguis fragilis*), the size of head is of value as indicating age. I am certain that when first the young attain a fair average size, their heads, in comparison with their bodies, are proportionately much smaller than those of more mature individuals; and the firmness and weight of the cranial bones of some of the latter lead me to believe that these may have attained to a very considerable age. A Slow-worm I had, eleven years old, and eighteen inches long, was not nearly so marked in this particular, nor so robust, as several tailless specimens of the same species which I have seen. I have caught many more Vipers than I have kept; in fact, whenever I see a Viper I try to catch it,—with a fair chance of success,—and after holding it a little, in order to make it less careless and liable to be destroyed, I let it go. The largest I have ever seen was locally a giant; I kept it for two months, and again and again placed it in a long box, where I could measure it as accurately as a living snake ever can be measured, and it was considerably over 26 in., but not more than $26\frac{1}{2}$ in. in length: $26\frac{3}{8}$ in. was about the exact extent of this specimen, which was a female. The head was very large, and when caught

it splashed drops of a transparent fluid from the mouth against the tin which it had to enter. But the snout had not the aspid character mentioned by Mr. Boulenger (p. 89). It had received an injury at the base of the tail, and by this I identified it when recaptured two years after its first liberation. None of mine fed, though they readily drank, in their cages. Dr. Henry Bird, a very close observer, informs me that he dissected many Vipers which he caught in the Forest of Dean, where he practised, and that he several times found in them the common black Dew-slug, *Arion ater*; his notes as to sexual features coincide with those of Mr. Boulenger, as do my own. I am ashamed to add that I never attended to outward cranial differences; but next summer I intend to carry with me a piece of wax, and with this hastily take an impression from the upper part of the head of any Viper which I may catch. The moulds I will send to Mr. Boulenger next autumn, and I am sure that they will be sufficient to record the number of the various plates. There is no necessity for killing the specimens, unless particularly wanted for other reasons.—CHARLES A. WITCHELL (Stroud, Gloucestershire).

FISHES.

Greenland Shark at Lynn.—Mr. D. C. Burlingham was kind enough to inform me of the occurrence of a male Greenland Shark, *Læmargus borealis*, which measured 14 feet 2 inches in length, and weighed 1½ tons, at Lynn, on the 21st January last. It was found stranded on a sand-bank on the east side of the Bulldog Channel, and was brought up to Lynn by a fishing-smack, being still alive when Mr. Burlingham saw it. From Prof. Newton I learn that this fish was subsequently exhibited at Cambridge, and that its owner intended to take it to Huntingdon, Peterborough, and elsewhere. This species is of rare occurrence on the Norfolk and Suffolk coast, and the present example is only the fourth of which I have notes. During the autumn herring fishery, Porbeagles, *Lamna cornubica*, were unusually frequent, much to the annoyance of the fishermen, to whom they cause both trouble and loss by entangling themselves in the nets. Several fine examples were brought into Yarmouth and Lowestoft.—T. SOUTHWELL (Norwich). [See the dentition figured by Günther, 'Introd.' p. 333.—ED.]

Pipe-fishes in Cork Harbour and Killala Bay.—In 'The Zoologist' for February last Mr. Barrett-Hamilton has recorded the occurrence of the Æquoreal Pipe-fish, *Nerophis æquoreus*, at Waterville, Co. Kerry, and quotes Thompson for localities, which I can corroborate as to the Co. Cork; for when trawling in the "narrow channel" in Cork Harbour I often got this species, as well as the Great Pipe-fish, and one of the smaller kinds, which I think was the Lesser Pipe-fish. However, I have procured the last named off the island of Bartragh, Killala Bay, and it was identified by the

late Wm. Thompson himself, to whom I sent the specimen.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

Leptocephalus Morrisii at Killala Bay.—On February 26th, while walking on the sands outside the island of Bartragh, I found two specimens of this curious little fish, left by the previous tide at high-water mark, and although it was fully six hours since they had been thrown ashore, they both showed such vitality as to move about in a vessel of water for some time after they were found. The largest was fully six inches in length, and both were perfectly transparent, the only trace of colour that I could see about them was in the eye-balls. They were both thrown up on the sands within a few yards of each other. Although Thompson, in the fourth volume of his 'Natural History of Ireland, refers to the occurrence of this species on many parts of the Irish coast, I have never before met with a specimen.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 18, 1892.—Prof. STEWART, President, in the chair.

Mr. Stanley Edwards was admitted, and Messrs. C. Chilton, F. A. Skuse, and J. Humphreys were elected Fellows of the Society.

The President exhibited specimens of *Cystocalia immaculata*, an orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male (which is unusual), and the stridulating apparatus of the male differs in certain important details from that of other species. A discussion followed on stridulation in insects and the various modes of producing it, in which Messrs. C. Breeze, E. M. Holmes, and B. Daydon Jackson took part.

The President also exhibited some specimens of a crustacean, *Ocypoda ceratophthalma*, and communicated some interesting information thereon.

A paper by Prof. Groom was then read "On Bud-protection in Dicotyledons," and in his unavoidable absence, the author's views were expounded by Mr. B. Daydon Jackson.

Mr. W. T. Thiselton Dyer, C.M.G., F.R.S., communicated a paper, by Herr F. Stephani, entitled "A Revision of Colenso's New Zealand *Hepaticæ*."

March 3.—Prof. STEWART, President, in the chair.

A letter was read from the Home Secretary, conveying the thanks of Her Majesty the Queen for the address of condolence which had been

forwarded on behalf of the Society on the death of H.R.H. the Duke of Clarence and Avondale.

The President announced the presentation, by Sir Joseph Hooker, M.D., K.C.M.G., to the Society of two medallion portraits of Sir James Ross and Dr. John Richardson, whose names are well known in connection with arctic exploration. The medallions were executed in 1843 by the late Bernhard Smith. A vote of thanks to the donor was passed unanimously.

Mr. Clement Reid exhibited a collection of fossil plants and seeds which he had found associated with the bones of Rhinoceros and other animals in the neighbourhood of Selsea and West Wittering. By means of diagrams, Mr. Reid showed the exact position of the bed, and described the condition in which the various specimens were deposited.

On behalf of Mr. W. E. Beckwith, of Shrewsbury, Mr. H. Seebohm exhibited a specimen of White's Thrush (*Turdus varius*, Pallas; *Oreocinclavaria*, Seebohm), which had been shot in the parish of Moreton Corbet, seven miles from Shrewsbury, on the 14th January last. He pointed out that this species, which inhabits Eastern Asia, belongs to the subgenus *Oreocinclavaria*, an exclusively eastern group of ground Thrushes, and is the only one which is palæarctic and migratory. It does not breed anywhere west of the Yenisei, and its occurrence in Europe is accidental. Mr. Seebohm added that it had been met with twice in France, four times in Italy, three times in Belgium, once or twice in Austria and Prussia, once in Norway, thirteen times in Heligoland (between 1827 and 1884), and about a score of times in the British Islands, including three occurrences in Ireland, and one in the extreme south of Scotland.

On behalf of Mr. A. Craig Christie, the Secretary exhibited some specimens, as was supposed, of *Lycopodium complanatum*, collected in Scotland, on which it was suggested that the plant might be regarded as British. In the opinion, however, of Mr. James Groves, who had carefully examined the specimens, and other botanists present, they were referable to *L. alpinum*. Mr. Groves pointed out the distinctive characters of both. Mr. Carruthers was of opinion that *L. complanatum* had been met with in the South of England, but not within the last ten years. Mr. E. M. Holmes was under the impression he had seen it growing a few years ago near Stroud.

A paper was then read by Mr. A. D. Michael on variations in the internal anatomy, and especially the genital organs, of the *Gamasinae*, a typical subfamily of the *Acari*. In this paper the author gave the results of two years' research, including many hundreds of dissections and serial sections, with lengthy observations of the living creatures. The comparison of variable organs was worked out in numerous species, showing great specific differences. Four of the species were found to be previously

undescribed, and for these the names *Hæmogamasus horridus*, *H. nidi*, *Lalaps oribatoides*, and *L. ligoniformis* were proposed.

March 17.—Prof. STEWART, President, in the chair.

Mr. E. M. Holmes exhibited specimens of *Phacelocarpus disciger*, a new species of sea-weed from Cape Colony, collected by Dr. Becker near the mouth of the Kowie River. One of the specimens exhibited bore antheridia which have not previously been described in this genus. The species differs from those already known in bearing the organs of reproduction on the surface of the frond instead of on the margin.

Mr. Buxton Shillitoe exhibited and made some remarks upon the flowers of *Leucojum vernum* and *Helleborus viridis*.

On behalf of Mr. Allan Swan, the Secretary read a paper "On the vitality of the spores of *Bacillus megatherium*," upon which criticism was offered by Mr. G. Murray.

Mr. J. B. Carlill submitted a paper entitled "Notes on Zebras," in which he discussed the position assigned to the Zebra in the genus *Equus*; the use and nature of striped coats; the contention that the sallenders on the legs of the *Equidæ* represent the hoof of the first digit of their polydactyl ancestors; and the evidence bearing upon Prof. Owen's view that the cave horse was in some respects zebrine. He concluded by advocating a systematic attempt to domesticate one or more species of Zebra for transport work. Domestication, he considered, would not only render these animals eminently useful, but would be the only means of preserving them from extinction.

ZOOLOGICAL SOCIETY OF LONDON.

February 16, 1892.—OSBERT SALVIN, Esq., F.R.S., Vice-President, in the chair.

Mr. W. T. Blanford exhibited two heads and a skin of the Yarkand stag, lent for exhibition by Major C. S. Cumberland, by whom they had been obtained, and proposed the name of *Cervus elaphus yarkandensis* for this form.

Mr. Sclater exhibited and made remarks on some living specimens of what are commonly called Spinning or Japanese Mice.

Mr. Sclater also exhibited and made remarks on some mounted heads of Antelopes from Somali-land, belonging to Capt. Swayne, R.E., amongst which was an example of the recently described Swayne's Hartebeeste, *Bubalis swaynei*.

Mr. A. Smith-Woodward exhibited and made remarks on examples of the supposed jaws and teeth of *Bothriolepis* from the upper Devonian Formation of Canada.

Mr. F. E. Beddard read a paper containing the results of his examination of the Chimpanzee "Sally" and the Orang "George," lately living in the Society's Menagerie. The author's remarks referred principally to the external characters and the muscular anatomy of these Anthropoid Apes.

A communication from Mr. A. G. Butler gave an account of a collection of Lepidoptera from Sandakan, N.E. Borneo.

Mr. G. A. Boulenger gave an account of a third collection of fishes made by Surgeon-Major A. S. G. Jayakar at Muscat, East Coast of Arabia. Amongst these was a specimen of *Histiogaster typus*, a fish described in 'Fauna Japonica,' but not since recognised; and an example of a new species of *Box*, proposed to be called *B. lineatus*.

A communication from Dr. W. B. Benham contained a description of three new species of Earthworms from British Colombia and South Africa. These were proposed to be called *Plutellus perrieri*, *Microchata papillata*, and *M. belli*.

Mr. F. E. Beddard read a paper on some new species of Earthworms of the genus *Perichæta*.

A communication was read, from Dr. H. Bolau, on the specimens of *Haliaeetus pelagicus* and *H. branickii*, now living in the Zoological Gardens of Hamburg. Coloured drawings of these nearly allied Sea Eagles were exhibited.

March 1.—Dr. A. GUNTHER, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during February, and called attention to two Short-winged Tyrants, *Machetornis rixosa*, purchased Feb. 15th, being the first examples of this bird that have reached the Society; and to a female Beatrix Antelope, *Oryx beatrix*, from Arabia, presented by Lieut.-Col. Talbot, Feb. 18th.

Mr. J. Graham Kerr gave a short account of the expedition up the Rio Pilcomayo in 1890-91, which he had accompanied as naturalist. Mr. Kerr made remarks on the animals met with on the banks of the Pilcomayo, and exhibited, with the aid of the oxy-hydrogen light, a series of photographs illustrating the vegetation of the district and its native inhabitants.

Mr. G. F. Hampson read a paper on stridulation in certain Lepidoptera, and on the distortion of the hind wings in the males of certain *Ommatophorinæ*. The author attributed the clicking sound described by Darwin as produced by various species of the South American genus of butterflies *Angerona*, and confirmed by Wallace and other observers, to the presence of a pair of strong corneous hooks on the thorax, which play on a pair of curved hooks with spatulate ends attached to the inner margin of the fore wing close to the base, and surrounded by a membranous sac which acts as a sounding-board. An account was given of a similar sound produced by

the males of a Burmese moth of the family *Agaristidæ*, and of a buzzing sound in an allied Australian form, both of which have a patch of ribbed hyaline membrane below the costa of the fore wing. The sound was attributed to the friction of spines, attached in the former to the first pair of legs, in the latter to the second pair, on the ribbed membrane. A description was then given of the transformation of the costal half of the hind wing in the Noctuid genus *Patula* into a large scent-gland, and of the manner in which this had distorted the neuration. The still greater distortion of the neuration in the allied genus *Argida* was attributed to its once having possessed a similar scent-gland, now become rudimentary by disuse.

A communication was read from Prof. W. N. Parker on the retention of functional gills in young frogs (*Rana temporaria*), which he had succeeded in producing in specimens reared in his laboratory. Prof. Parker described the method employed with this object, and made remarks on the way in which the fore limbs are protruded.

Prof. F. Jeffrey Bell read a paper entitled "A contribution to the Classification of Ophiuroids," to which were added descriptions of some new and little-known forms of this group.

Mr. M. F. Woodward gave an account of an abnormal earthworm (*Lumbricus terrestris*), possessing seven pairs of ovaries situated on the eighth and following somites to the fourteenth.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Feb. 24, 1892.—MR. FREDERICK DUCANE GODMAN, F.R.S., President, in the chair.

The Secretary read a letter from General Sir Dighton Probyn, K.C.B., Comptroller to the Prince of Wales, conveying the thanks of the Prince and Princess of Wales for the expression of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded to Sir Dighton Probyn by the Secretary, on behalf of the Society.

Mr. Walter Cuthbert Biddell, of 32, The Grove, Bolton Gardens, S.W.; and Mr. Douglas Stuart Steuart, of North Leigh, Prestwich, Lancashire, were elected Fellows; and Mr. Philip de la Garde, R.N., was admitted into the Society.

The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening.

Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg

consisted of three distinct femora, tibiæ and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*.

Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmecaria subcarinata*, Sm., and *Aphanogaster (messor) barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmecaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphanogaster barbarus* var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjab, the bee disfiguring the arches and roofs with its huge nests, and the ant frequenting the gardens and steps.

The Hon. Walter Rothschild communicated a paper entitled "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing, by Mr. F. W. Frohawk, of the male, variety of the male, female, and under-side of the species.

March 9, 1892.—Mr. FREDERICK DUCANE GODMAN, F.R.S., President, in the chair.

Captain Clement Alfred Rigny Browne, R.E., care of Messrs. Grindlay, Groome, and Co., of Bombay; His Grace the Duke of Devonshire, LL.D., Chancellor of the University of Cambridge, of Devonshire House, 78, Piccadilly, W.; Mr. J. H. Leslie, of 44, Cheriton Square, Upper Tooting, S.W.; Mr. R. M. Lightfoot, of Bree Street, Cape Town, Cape of Good Hope; and Mr. Sidney Robinson, of Goldsmith's Hall, E.C., were elected Fellows of the Society.

Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocalia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the stridulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part.

Mr. Elwes exhibited specimens of *Ribes aureum* which were covered with galls, as to the nature of which the Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr. Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of Heterocera recently collected by Mr. Doherty in South-east Borneo and

Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued.

Mr. Barrett exhibited a series of specimens of *Noctua festiva*, bred by Mr. G. B. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type and the form formerly described as a distinct species under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens.

Mr. W. C. Boyd exhibited a specimen of *Dianthecia Barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. Barrettii*—which had until recently been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall.

Mr. Tutt exhibited specimens of *Polia xanthomista* from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb. They included, amongst others, a specimen much suffused with yellow, and resembling Hübner's type and Gregson's type of var. *statices*, which Mr. Tutt stated was practically identical with Treitschke's *nigrocincta*. He remarked that certain localities appeared to produce different forms of this species, responding largely to their environment as far as colour is concerned, and were thus protected by resemblance to their surroundings.

Mr. G. A. James Rothney exhibited and read notes on a large collection of Indian Ants which he had made in Bengal between 1872 and 1886, comprising some 90 species. He stated that 18 of these species had been described by Dr. Mayr in his paper entitled "Ameisen Fauna Asiens," 1878; he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about ten species and one new genus which Dr. Forel had not yet determined.

Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places. Mr. Cockerell had pointed out, in a letter dated 16th Feb. last, that the species is notable for the sharp division between the thorax and abdomen; and that he had formerly distributed it under the name of *Aspidiotus rufescens*, but had since satisfied himself that it was identical with *A. articulatus* from Demerara. He added that the species fed on a variety of plants, and was known from Demerara, Jamaica, and Barbados.

Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an introduction by himself, entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species."

The Rev. A. E. Eaton communicated a paper entitled "On new Species of Ephemeriidæ from the Tenasserim Valley."—H. Goss, *Hon. Sec.*

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PLAGUE OF FIELD VOLES IN THE SOUTH OF SCOTLAND.

A REPORT has just been published (March, 1892) by the Board of Agriculture on the subject of a plague of Field Voles (*Arvicola agrestis*), which has resulted in an extensive destruction of young grass and herbage on the hill grazings and rough pastures of the South of Scotland.

Various complaints on this subject had reached the Department during the past winter, and a formal resolution was forwarded by the Highland and Agricultural Society of Scotland, on the 20th January last, asking the Board of Agriculture to undertake an investigation into the circumstances and causes of the plague, with a view of ascertaining what preventives and remedies might be employed.

Instructions were accordingly issued to local inspectors of the Board to make inquiry into the matter. The aim of the investigations was to learn the extent and circumstances of the plague, the areas and classes of pasture specially affected, and the steps suggested by present experience or by the remembrance of former attacks, either as preventive or as remedial measures.

The Inspectors have reported the plague to be especially serious along the northern boundary of Dumfriesshire, east of Thornhill, and in the north-west of Roxburgh, while the border districts in the south of Selkirk, Peebles, and Lanark, and the parishes of Carsphairn and Dalry, in the extreme north of the

Stewartry of Kirkcudbright, are also reported to be more or less affected. In Roxburgh and Dumfries the plague is estimated to have extended over an area of from 80,000 to 90,000 acres.

The so-called Field Mouse, or, more properly, Field Vole, which has thus proved so destructive to the pastures is recognised as *Arvicola agrestis* (Linn.). This pest was observed to be more than usually numerous in the autumn and winter of 1890, and to multiply rapidly in the following spring and summer. The mice apparently first attacked the boggy and rough pasture lands, and as the latter became foul or exhausted, the attack spread to the barer lea land and even to the heather. Damage to young trees in enclosed plantations has also been reported, but this may probably be attributed to the attacks of the Bank Vole, *Arvicola glareolus* (Schreber). [See p. 166.]

Sheep are reported to be suffering severely in the districts affected, and large portions of many flocks have been removed to winterage, wherever that can be found. Hay and artificial foods are necessarily being used for feeding stock on many hirsels. Arable land is, it is stated, not appreciably affected, but fears are entertained that the seed-corn may be attacked, especially in low lands where the mice can work their way up the furrows.

A preponderance of opinion amongst farmers is reported tracing the cause of the present outbreak to the scarcity of Owls, Kestrels, Hawks, Weasels, and other vermin. All these animals are to be ranged among the natural enemies of the mice, and even Crows may be placed in the same category. A climatic cause of very considerable importance is also pointed out, in the fact that the peculiarly luxuriant hill-growth in the winter of 1890-91, coupled with the mildness of that season in Scotland, afforded the Voles unusual advantages in the shape of shelter from their natural enemies, and favoured their increase.

Pits or traps, such as are resorted to on the Continent, are reported to have proved of but little use as remedies on this occasion, and although thousands of Voles have been killed by men with spades and dogs, this method can only be of limited avail under the circumstances. The Inspectors concur in representing that, in the absence of a natural remedy, the general feeling favours the burning of the affected ground, as offering a more effective means of possibly exterminating the pest.

Mr. R. F. Dudgeon's Report upon the Plague of Field Voles in the Counties of Roxburgh and Dumfries, and the Stewartry of Kirkcudbright.

From replies to circulars addressed to thirty or forty landlords, factors, and tenant farmers in the above counties, I am able to report as follows:—

ROXBURGH.—The districts of this county affected by the plague are the west and south-west portions of Teviotdale adjoining the counties of Selkirk and Dumfries, and the south-west portion of Liddesdale. The gross area of the farms seriously affected may be stated as between 30,000 and 40,000 acres.

The Voles, although more or less numerous than usual for the previous two years, multiplied to an alarming extent during the spring and summer of 1891. A correspondent in Teviotdale describes them as now "swarming in millions." They apparently first attack the deeper boggy and rough pasture lands, which are destroyed to the extent of nearly four-fifths* of their area; one-half of the area of the hill farms in the districts named may be said to be in bog or rough pasture, and I think that I should not be far wrong in stating that some 12,000 to 15,000 acres have been rendered entirely useless by reason of the plague. As the bog or rough pasture becomes foul or exhausted, the Voles spread to the barer lea land, and even to the heather, which they bark, at the same time biting off the young shoots. The grasses are first attacked close to the surface of the ground, and the stalk is consumed as far as it continues white or succulent; young shoots are also nipped off; grass tufts are to be seen completely eaten through, what is left by the Voles being absolutely valueless. Sheep are suffering severely in the districts affected; large portions of many flocks have been removed to winterage, wherever that can be found, artificial food and purchased hay is being given to the stock on many hirsels; the lightness of last year's hay crop and the present high price of purchased fodder, cakes, and corn adds very considerably to the difficulties of the farmers. Plantations are in some instances attacked, buds being nipped off, and bark peeled. The arable land attached to some of the farms is not

* Note.—A later communication from the Inspector states that even a larger proportion than this has been totally destroyed.

appreciably affected, although I am informed by one of my correspondents that during the leading of his corn last autumn Voles were discovered under nearly every stook, nests were also found, as well as eaten corn; fears are entertained that the seed-corn may be attacked, especially in lea land, where the Voles can work their way up the furrows.

There appears to be no increase of the plague at present, indeed some of my correspondents testify to an actual diminution; all, however, agree that this is not the breeding season; were such favourable, the prospects for next summer are appalling. Even should the plague be at once exterminated I fear the summer grazing on many farms must be very poor. It has been observed by a correspondent who has given great attention to the subject that "Deep snowstorms, especially in the spring months, undoubtedly, favour the production of the pest, more than a winter of open fresh weather; this may be accounted for by the perfect protection the covering of snow affords from the natural enemies of the Vole, and to the vigilance of those enemies being directed elsewhere for food supplies."

The cause of the plague is almost universally held to be the destruction of the natural enemies of the Voles,—Hawks, Owls, Weasels, &c.,—and it has been remarked that, where plantations are present, affording roosting for birds of prey, the districts in their vicinity are less seriously affected. The gentleman above alluded to as having observed the effect of snowstorms, remarks in this connexion:—"During the outbreak of the mice plague in 1875, under the large trees in some of the dense woods in Upper Teviotdale, where the Owls roosted during the day, large accumulations of the droppings of those birds, consisting of the fur and half-digested skins of the mice, were seen on every hand." Complaints are also made of the restrictions regarding moor-burning. I learn that on one farm upon the patches burnt last year and the year before there is not a hole or a Vole to be seen; it would appear in this case that the vermin had no chance upon the bare ground against their natural enemies. A correspondent, with, I think, sufficient reason, directs attention to the unusual roughness of the pasture in the autumn and winter of 1890, whereby the Voles were afforded obscurity from their enemies and unwonted facilities for breeding. The unusual mildness of the spring of 1891 must also have been very favourable to the protection of the Vole.

Various means have been attempted to destroy the vermin; pits and trenches dug and traps set where the Voles are most abundant have been found useless. Several farmers have carried out organised raids with men provided with spades (sticks being worthless for purposes of destruction) and accompanied by dogs, and although thousands of Voles have been killed in this way, little appreciable difference in the numbers seen is said to be noticeable. Burning seems comparatively effective, especially where a mass of the Voles can be surrounded, and the patches of ground set fire to on several sides simultaneously. The Common Crow has been observed in summer to pick out the nests and destroy the young.

DUMFRIES.—There may be said to be three separate districts affected with the plague in Dumfriesshire: (1) In the north-east portion of the county, in the parish of Eskdalemuir, and the upper portion of the parish of Westerkirk, it is very general; I should say some 20,000 acres are here more or less seriously affected. (2) In the upper portion of Annandale in the neighbourhood of Moffat, more especially on its western side, nearly every hill farm is suffering from the plague. The area affected in this district I put at 12,000 to 15,000 acres. (3) In a third area, extending from Queensberry Hill on the east to the vicinity of Thornhill on the west, about 15,000 acres are infested.

The report I have already made in relation to the circumstances of the plague, its cause, and suggestions for the destruction of the Voles, under the heading Roxburgh, applies in every particular to Dumfriesshire. The boggy land is almost totally destroyed, sheep are being removed from many hirsels, and hand-feeding at great expense is being resorted to. Unlike Roxburghshire, the plague does not appear to have visited Dumfriesshire, except in one parish on the Roxburgh border, in 1875. The Voles are reported, it is worthy of note, in the summer of 1889 to have infested in enormous quantities the low-lying pastures in the vicinity of Closeburn, to have remained during 1890, and to have disappeared, probably migrating to the neighbouring hills, where they now abound, in 1891. The grass, I may mention, in the pasture fields was unusually abundant during the summers 1889 and 1890, and when eaten bare in 1891, the vermin disappeared; this fact apparently confirms the opinion I have already alluded to, that there is a traceable connexion

between abundant growth of grass and abnormal increase of Voles.

KIRKCUDBRIGHT.—The plague only seriously affects a district in the extreme north of the Stewartry, the hill farms in the parish of Carsphairn are very generally affected, and the Voles have quite lately made their appearance in the adjoining parish of Dalry. I should say that some 10,000 to 12,000 acres in the Stewartry are infested by the plague. In a parish in the centre of the Stewartry complaints are made of Voles attacking plantations situated in enclosed land; this Vole, however, has been declared by an expert to be the Bank Vole, a different species to the Field Vole found elsewhere.

The Voles were first noticed in August, 1890, since which time they have increased enormously. As in other counties, their principal habitat is the boggy land, but they are to be found on all the grass area, and at any altitude.

My remarks already expressed relating to the circumstances of the plague, its cause, and proposed remedial or preventive measures apply with equal force to Kirkcudbright. The suddenness of the plague, and the alarming rapidity of its increase, is the subject of general comment. A shepherd reports that he has carefully examined the burrows, and while the majority range from 6 to 14 inches deep, he has found them as deep as 25 inches; in no case did he find signs of a resting-place inside a burrow, and he is of opinion that, at this season of the year at any rate, the Voles do not go underground, but make their resting-places in nests upon the surface.

There is a general complaint of the increase of Moles and Rats over the whole Stewartry.

I regret that I find it impossible to offer any very practical suggestions as to the means to be adopted with a view either to the destruction of the plague, or to its prevention in the future. Raids upon the most infested spots, with dogs and men armed with spades, used both for purpose of digging up the burrows and crushing the Voles, cannot fail to have some effect in diminishing the numbers. Something might be effected by the extension of the period when moor-burning is permitted, or even, in the presence of the plague, burning small patches of affected ground might be allowed at all seasons, under proper supervision, and with requisite permission from some properly constituted neutral authority.

Restrictions upon the destruction of birds of the hawk tribe—which might be protected by their inclusion in the scheduled list of the Wild Birds Protection Act, 1880—and of the Stoat and Weasel seem advisable. Plantations where the birds of prey might roost in the vicinity of hill pastures would appear worthy of recommendation.

As regards the immediate cause of the present outbreak of the plague, I am inclined to lay considerable stress upon the fact of the unusual “roughness” of pastures in the winter 1890–91, and to the mildness of the weather at that time, whereby the Voles, always more or less present, gained an extraordinary advantage in the shape of shelter from their natural enemies, and in facilities for breeding. In Fleming’s ‘History of British Animals,’ an old but excellent authority, this Vole is said (p. 23) to “multiply prodigiously in certain seasons.” The suddenness of the appearance of the plague seems undoubtedly to point to some climatic cause, and the previous outbreak in Roxburgh in 1875, when, by the way, the plague was neither so extensive, nor did it so rapidly increase, was preceded by somewhat similar climatic circumstances. The suddenness of the departure of the plague of sixteen years ago leads one to hope that a similar sudden relief may be experienced at present; according to general report, the plague of 1875 disappeared immediately after a snowstorm in the spring of 1876, followed by a “rough thaw,” when the half-melted snow was frozen into a “plate,” sealing everything up. One dares, however, hardly hope for the cessation of the plague by means of such a cure, which in all probability would create as much havoc among sheep as among voles, especially when the sheep are—as in the affected districts they cannot fail to be—in an abnormally poor condition. Should relief in some shape or other not soon appear, the prospects of the farmers whose pastures have suffered from the plague are dismal in the extreme.—ROBERT F. DUDGEON (The Grange, Kirkcudbright, Feb. 9, 1892).

Mr. James Inglis Davidson’s Report on the Plague of Field Mice or Voles at present affecting certain districts in the Counties of Selkirk, Peebles, and Lanark.

I have made extensive inquiries as to the plague of Voles which at present infest certain districts in the counties of Selkirk,

Peebles and Lanark, and having visited and inspected typical cases of damage in each of these counties, I have to report as follows:—

This plague seems to have first made itself felt in the higher districts of Selkirkshire, which is the most seriously affected of the counties visited. Voles are stated to be always present on the hill pastures, but they began to show signs of increase in 1890, and in the spring of 1891 are reported to have appeared in alarming numbers. The southern half of Selkirkshire, including the whole of the parish of Ettrick, and a considerable part of Yarrow, is now reported to be more or less seriously affected, and the present tendency of the Voles seems to be to spread northwards and westwards.

In Peeblesshire a number of farms in the parish of Tweedsmuir are more or less affected, but, so far as my inquiries prove, the Voles did not appear there in exceptional numbers until the spring of last year.

About the same time they also appeared in the Upper Ward of Lanarkshire, on a number of hill farms in the parish of Crawford on both sides of Clyde, where they have increased very rapidly, and done material damage.

Universal testimony points to bog-land as the class of pasture first and most seriously affected, and as its value for winter and spring food on the otherwise "white" or grassy farms in these districts is very great, the temporary destruction of the bog-land is naturally looked upon with great apprehension by the hill-farmers. Their depredations are, however, not confined to this class of pasture, as both benty and the shorter and sweeter grasses, locally termed "lea ground," are in many cases considerably damaged, while it is now reported that heather, which has hitherto escaped their attacks, is also being affected. So far as my own observations have gone, however, their attacks on hard and heathery land have not been serious, nor are they likely to be so, so long as a supply of damp and boggy ground is available.

Opinions differ widely as to the cause of the present outbreak. Among farmers there is a considerable preponderance of opinion in favour of the view that the destruction of Hawks, Owls, and Weasels, and the consequent disturbance of the balance of nature, are mainly accountable for it. On the other hand, it is affirmed that the natural enemies of the Voles have not, in recent years, been more extensively destroyed than has always been the case,

and that recent mild winters and growthy summers have chiefly contributed to the present state of matters.

As regards remedial measures, numerous suggestions have been made, but, so far as I have been able to ascertain, none has been very efficient, though large numbers of Voles are reported to have been destroyed by men and dogs. While there is little doubt that considerable numbers can be killed in this way, it seems to be fairly evident from the numerous burrows in which the mice secrete themselves, and the runs through which they so alertly escape to them, that anything like total extermination by this means is improbable. I have, however, been informed from two sources, that by placing small "cocks" of hay or other fodder here and there over the affected ground, on wooden rods, which serve as bearers for their removal to other places, large numbers immediately betake themselves to these for purposes of shelter, and their destruction is thus greatly facilitated on the removal of the "cocks." Pits dug in the line of their runs, wider at the bottom than at top, have also been suggested, and are reported, where tried on a small scale, to have been fairly effective. On the other hand, I have been informed that, where tried on open land, they have proved inefficient, but I have not had any opportunity of judging of this for myself. I believe that experiments are at present being made with the view of poisoning the Voles in enclosed places, but I have not yet learned with what degree of success. Traps, so far as I have been informed, are of no use for the purpose.

So far as I have been able to ascertain, the general feeling among practical men appears to be that, in the absence of nature coming to aid in the extermination of this pest, extensive burning of the affected ground is the most likely method of compassing their destruction. There are, of course, practical difficulties in the way of applying this remedy to an unlimited extent, as, apart from restrictions in leases affecting the question, it is imperative that sufficient herbage should be preserved for the maintenance of the stocks during the trying spring season, which has yet to be faced, but the propriety of applying this remedy as far as practicable is generally admitted. With this view it has been proposed that the statutory period available for such purposes should be extended, so that not only would the chances of more favourable weather for effective burning be increased, but the

period during which the sheep would be denied the use of the burnt ground would be shortened, in respect that the season of growth would be nearer at hand.

It is to be pointed out that the effect of the depredations already committed by the mice must somewhat militate against the chance of effective burning, as over large areas of the affected ground the herbage lies sodden and saturated on its surface, in consequence of the severance of the stalks from the roots. The sheep drains, too, have been in many places choked by the severed herbage which has fallen into them. This makes the desirability of extending the burning season till a drier period of the year all the more obvious.

Suggestions have been made that where bog land is not of a nature suitable for burning, it might be occasionally cut, to remove accumulations of decayed vegetation, in which the Voles are wont to harbour, though some practical authorities dispute the propriety of burning or otherwise interfering with bog land at all, but affirm that burning should be restricted to the benty ground.

It has been suggested that the areas burned should be kindled on all sides simultaneously, so that the vermin should escape less readily, and if this were followed up by active measures with men and dogs on the unburnt areas to which those escaping would doubtless betake themselves, a very material reduction in their numbers would probably be effected.

On the occasion of a previous outbreak—about fifteen years ago—it is alleged that the Voles succumbed to natural causes, and disappeared suddenly after a severe frost following a heavy storm of rain and sleet. My information is that the extent of country then affected was much more limited than on the present occasion, but the foregoing testimony as to the disappearance of the plague is uniformly accepted in these districts.

The letters published by the Highland and Agricultural Society of Scotland will convey to the Board of Agriculture more forcibly than I can state it the serious character of the present outbreak, and the severe loss and inconvenience which stockowners in these districts are at present subjected to, which must be felt all the more keenly under present circumstances, when returns from hill farms are materially lessened from the lower values of sheep stocks, and when prices of hay and other fodder, which it has

been found necessary to substitute on many holdings, are at present higher than they have been for years.

I think it right to add that, so far as I am able to judge, no permanent damage is likely to follow to the land if the plague were once removed, and experience of the former visitation seems to support this view.

As already intimated, I am glad to state that Mid-Lothian has up to this time had no visitation of this plague. — JAMES I. DAVIDSON (Saughton Mains, Edinburgh, Feb. 16, 1892).

Mr. Walter Elliot, of Hollybush, Galashiels, in a letter to the Secretary of the Board of Agriculture, dated 30th January, 1892, says:—"I enclose a number of letters received in answer to mine; they are from reliable people, and have all the same story regarding the damage by mice. I have spent two days this week in the Ettrick district, and intend going into the Hawick district on Monday, and see some more of the farms. I was quite prepared before I left home to see a deal of damage; but one has no idea of the damage until one sees it. The mice are in myriads, and, over hundreds of acres, have eaten up every green thing. These letters do not exaggerate the matter in the least degree: it is the most serious matter that has overtaken the farmers in that district in any one's memory, and, worst of all, no one can see when or where it will end. There are already some thousands of sheep sent away to wintering. I saw droves of them going away the days I was there, and tons of Dutch hay being driven up to feed those that remain. That hay will cost nearly 20s. per ton to drive from the railway station, some of it more. What they will do with their sheep in the spring, when they must come home, is more than I can see, unless some great change takes place, and that speedily. I hope the Board of Agriculture will investigate the matter. I have no hesitation in saying there is more damage done upon one farm than all the damage over the whole country to the turnip crop by the moth or caterpillar that we heard so much about."

Amongst the enclosures forwarded by Mr. Elliot are several letters from which the following are extracts.

Mr. W. M. Oliver, of Howpasley, Hawick, N.B., writing on the 23rd January, 1892, says:—

“In answer to your questions regarding the plague of mice or Voles—There is no doubt that the cause of their great increase is due to the great destruction of vermin, their natural enemies, by keepers, not as much those of the proprietors as those of the shooting tenants. The amount of damage is not easily estimated; but I may state that almost the whole of the bog land is at present totally worthless for pasture, while the white land is also very much overrun with them, and now they have begun to attack the heather. We have had them more or less since they were so bad about fifteen years ago; but it is only within the last eighteen months that they have shown signs of increase, and during the last spring and summer the increase has been enormous.”

Mr. Henry Scott, of Midgehope, writes on Jan. 25th:—

“The cause of their increase is due to the destruction of their natural enemies, such as Hawks, Owls, Weasels, and Crows. The amount of damage is very great, as at present every green blade is eaten up, and will cause farmers a large amount of expense to winter their stock. The time they appeared was in the summer of 1890. Their numbers are not increasing at present, as they do not breed during winter. We are killing large numbers of them at present with dogs, but I do not expect to exterminate them in that way. Landed proprietors should be petitioned to allow all their natural enemies to increase, so that they might be able to cope with their destruction; but I think Government should take up the matter immediately.”

Mr. Charles J. Grieve, of Branhholm Park, Hawick, writes:—

“Cause of increase: chiefly the want of Weasels, Stoats, and ground vermin; also Magpies and Hawks. The shepherds say there is not a Weasel or Magpie to be seen. On the farm where the plague is at its height half the sheep stock ought to be removed if other pasture could be got, and not brought back till May. Many men are doing this as far as they can.”

Mr. Alexander Laidlaw, of Gair, writes on Jan. 25th:—

“You ask what I think the cause of their great increase is. I think the cause is greatly due to the destroying of their natural enemies, the Hawks, Owls, and Weasels, &c., which live mostly upon mice. The land round about here has been let to game tenants for some years past—a thing that was never done before—therefore the game watchers have destroyed all the natural enemies of the mice. That is the general opinion in this district of the great increase.”

Mr. James Grieve, of West Buccleuch, Selkirk, writing on Jan. 28th, says :—

“The cause of the great increase of the mice is, I believe, the destruction of the Weasels, Hawks, &c., and in proof of this, three years ago, when there were no signs of this plague, the shootings here and on a few more adjoining farms were let to an English shooting tenant, who at once put on keepers, one of whom lodged with a shepherd on my farm, and in a short time he trapped upwards of one hundred Weasels, also a number of Hawks, &c., and in the course of next season the mice began to appear. The damage done is so extensive that although I have nearly the half of the sheep stock removed from the farm, I do not see how the other half can subsist on the land until the grass comes.”

Mr. Charles Scott, of Milsington, writes on Jan. 26th :—

“My farm is very heathery, and it is almost impossible to get at them in it. Killed great numbers in my corn-fields during harvest; fear they will take the seed this time, especially on lea. They get cover between the furrows. Some gamekeepers are trying to put the blame on farmers for not burning more of their hills, which I think absurd. There is as much burnt as formerly, and some that were severely burnt are equally as bad; and it is only bent that should be burnt; no one would think of burning strong bogs. Landlords should stop their keepers and those of their shooting tenants from killing these natural enemies (what they call vermin), and give them a trial. The common Crow picked out the nests, and I think would kill lots of the young mice.”

This consensus of opinion, on the part of the Scotch farmers whose districts are affected, affords the best proof of the folly of destroying Hawks, Owls, Weasels, and other so-called “vermin,” under the mistaken idea that they prey only upon game, and in ignorance of the positive good they are able to do in the direction above indicated, if allowed to remain unmolested.

ON THE DISTRIBUTION OF THE CIRL BUNTING
IN GREAT BRITAIN.

BY O. V. APLIN, M. B. O. U.

(Concluded from page 128.)

BUCKINGHAMSHIRE.—Capt. A. Clark Kennedy was informed by the Rev. H. Harpur Crewe that on June 4th, 1864, he flushed a female Cirl Bunting from her nest with three eggs, on a rough, grassy down in the parish of Drayton Beauchamp; that he had on two other occasions observed a male bird in the same parish; that a pair which had been caught at Pitstone were brought to him alive in the winter of 1862–3; and that a birdcatcher of that neighbourhood informed him (Mr. Crewe) that he occasionally caught birds of this species in his nets during the autumn and winter months, and obtained a ready sale for them in London. Capt. Kennedy records also one shot at Risborough in 1839, and adds that Mr. Burgess informed him he fully believed he had seen the Cirl Bunting near Amersham ('Birds of Berks and Bucks,' p. 176–177).

HERTFORDSHIRE.—Mr. P. E. Coombe informed me that a Cirl Bunting was seen at King's Langley, by a competent observer, in November, 1878. One was shot near Royston, February 14th, 1881 (the late Mr. J. E. Littleboy, Trans. Herts Nat. Hist. Soc.). Mr. Howard Saunders says it is fairly common, although very local, on the chalk hills of Hertfordshire ('Manual of British Birds'). Mr. J. Young writes that he has worked round St. Albans and Bushey, but never met with it.

MIDDLESEX.—Mr. J. E. Harting wrote, in 1866, "Only an occasional visitant. . . . It has been observed and shot at Peckham, and more than once near Harrow. Two specimens have been killed at Hampstead Heath; one by Mr. Dugmore, jun., in April, 1855; the other by Mr. R. Power, in the spring of 1860. I have seen a bird of this species that was shot near Kingsbury Reservoir, and two others in the collection of Mr. Mitford, of Hampstead, which were obtained in that neighbourhood. A nest with three eggs of the Cirl Bunting was taken near Wembly Park in May, 1861, and one of the eggs, with the nest, is now in my collection" ('Birds of Middlesex,' p. 77). He now adds, "Mr. F. Bond had one which was caught near Harrow by a London

birdcatcher in 1870. In that year a flight of these birds came to a rough field at Hendon, and a few stayed about there for the next two years. In 1871 Mr. Mitford found a nest in a hedgerow in this field, and in 1872 saw one of the birds on Hampstead Heath. Mr. G. E. H. Barrett-Hamilton has two eggs taken near Harrow, which he believes are those of this species, but he did not see the bird. The Rev. H. J. Torre informed him that a male was caught near Harrow in the winter of 1837-8."

SURREY.—H. L. Meyer, in 1846, had no doubt of the Cirle Bunting being found sparingly in parts of Surrey, "having found nests and eggs agreeing in every respect" with those of that species. He had also seen birds he believed to be Cirle Buntings, but had not proved their identity "by the only sure test, that of shooting the bird from the nest" ('Coloured Illustrations of British Birds and their Eggs,' vol. iii. p. 63). A pair bred in Godalming Cemetery in May and June, 1887 (Rev. H. Benson, *Zool.* 1887, p. 303). Surrey is one of the counties in which, in the last edition of Yarrell, this bird is said to breed. Mr. J. Young has met with it about Reigate in winter.

KENT.—Mr. W. Oxenden Hammond, of St. Alban's Court, Wingham, writes:—"I have never myself seen the Cirle Bunting, but I have had specimens twice from Mr. Gordon, of the Dover Museum, obtained in that neighbourhood; and Mr. Dowker, in his 'Birds of East Kent,' speaks of it as common, and gives Mr. Gordon and Mr. Delmar . . . as his authorities." This, however, does not agree with my correspondent's own experience.

SUSSEX.—Mr. W. Borrer writes that this bird "is much more local" than the Yellow Bunting, "but is found at intervals all along the coast, though only in rare instances in the Weald, and then not far north of the Downs." He mentions a male shot at Cowfold. It was tolerably common in the neighbourhood of Brighton, and he has met with it occasionally, from Hastings in the east, to Bognor in the west. Mr. Borrer was shown a nest in Mr. Booth's garden in the Dyke Road, Brighton, on which the hen was sitting. It was placed among ferns on a rockery—a situation in which the nest "has been found several times near Brighton." According to Mr. Booth, as many as fifty or sixty of this species have been seen together in a flock ('Birds of Sussex,' p. 119). Mr. J. Young also has met with it near Brighton in winter. Mr. Percy E. Coombe, of Rickmansworth, tells me he

has frequently of late years seen this bird near Goodwood. The late Mr. A. E. Knox, in February, 1838, noticed a small flock near a newly cut hay-rick near Bognor. He shot a male and female, and found their stomachs filled with hay-seeds ('Ornithological Rambles'). Mr. P. J. Lothy shot a male from a flock of small birds near Bury, close under the South Downs, about four miles from Arundel, Dec. 31st, 1890, and another on April 26th, 1891, in the same place. He also observed several between Preston and Houghton, and secured specimens on Jan. 2nd, 1892 (*in litt.*).

HAMPSHIRE.—The Rev. J. E. Kelsall ascertained from enquiries that it is "resident, and almost, if not quite, universally distributed." He quotes authorities for its nesting in the New Forest, near Romsey and Stockbridge, in the Isle of Wight (especially near the coast), on Portsdown, at Southwick and Rowner, Botley, Selborne, and Alton, and for its occurrence in summer at Andover and Basingstoke; and in winter at Bishopstoke and Alresford. He adds, "doubtless overlooked in E. central district in spring" ('List of Birds of Hampshire,' 1890, p. 11). I have seen the Cirl Bunting (as above mentioned) at Basingstoke, but have never observed it during walks about the North Downs in the neighbourhood of Highclere, although I always looked carefully for it. I have also observed it near Ryde, Isle of Wight. Mr. J. Young has found it "very common" in Hampshire.

DORSETSHIRE.—Resident and not uncommon in the neighbourhood of the coast. Mr. Mansel Pleydell mentions one shot at Poxwell (Rev. O. P. Cambridge), and of others procured at Sherbourne (Aug. 2nd, 1882), Kimmeridge, Charmouth, Langton, Blandford, and Ensbury near Wimborne. Also of one caught at Weymouth, Dec. 23rd, 1870; two shot at Langton Maltravers in August, 1884, and three seen on Houghton Stubbs, July 10th, 1886; and of a nest and eggs in Warnwock Valley, Aug. 9th, 1877 (*vide* 'Birds of Dorsetshire,' p. 43). On July 24th, 1889, I saw a hen bird of this species near Pennsylvania Castle, Portland, where are the only trees on the island.

SOMERSET.—"Around Taunton and in West Somerset generally," writes the Rev. Murray A. Mathew, "it is a common bird. I have seen a nest in a lane in the town of Taunton. In East Somerset it is certainly rare. I never once met with it during the seven years I resided at Weston-super-Mare. I have never seen it here [Buckland Dinham, Frome], where we are within

four miles of Wilts. Dr. Parsons, of Frome, informs me that an example was obtained close to that town a few years since; but the Cirl Bunting appears to me only an occasional visitor to the eastern part of Somerset." Mr. H. St. B. Goldsmith, of Bridgewater, reports that "the Cirl Bunting is only fairly common here. I have found its nest near the coast, and have seen eggs taken on the hills on the east side of this town. I have hardly ever seen it in winter, and I fancy it leaves this neighbourhood then. I have not noticed it in the marshes, nor in the low-lying parts where the trees are less numerous. It appears to frequent certain localities, as those I have seen have been generally near the same spots; but I think nearer the coast they are more widely distributed, judging from the nests I have known. I have eggs taken on Aller Hill, at Langport [near Somerton], but not by myself." In a subsequent letter, dated June 7th, 1891, he mentions seeing three pairs on the hill to the east of Bridgewater (towards Glastonbury) a few days before. Montagu records it at Bridgewater in 1803, and that he himself observed a pair in April, 1805, between Bridgewater and Glastonbury.

DEVON.—First discovered by Montagu (as a British bird) near Kingsbridge, in the winter of 1800; he found it not uncommon among flocks of Yellow Buntings and Chaffinches, and procured several specimens of both sexes, killed in different places six or seven miles from that place. He also found it at Teignmouth, and discovered the nest (Orn. Dictionary). In his 'Supplement,' Montagu mentions the observation of this species in some of the inland parts of Devon, especially about Ashburton. The Rev. Murray A. Mathew writes:—"It used to be a very common bird in the neighbourhood of Barnstaple when I was a boy, now some forty years ago. In a lane near our house I once detected four pairs within a distance of a couple of hundred yards." Mr. W. E. H. Pidsley writes of the neighbourhood of Broadclyst, "It seems to me to be fairly plentiful, nearly every year I find its nest." The Rev. G. C. Green writes from Modbury Vicarage, S. Devon, "The Cirl Bunting I occasionally see, and the neighbourhood of Plymouth is, I fancy, one of its most frequented haunts." Mr. Arthur H. Macpherson found it abundant in March, 1887, in the neighbourhood of Newton Abbot; and in the spring of 1891 he noted it as fairly numerous in the neighbourhood of Holsworthy and in the cultivated districts through which he walked

in Devon. Mr. J. Young has met with it near Torquay in spring. Mr. Pidsley writes of it there that it is of somewhat partial distribution, and from his own experience alone he would consider it a scarce bird; he adds, "it is never really abundant in my own district." He quotes Mr. Rawson's opinion that it is well distributed in both North and South Devon, especially the former; also that of Mr. Mitchell to the same effect, as to North Devon; the latter observer, however, found its numbers decrease in the centre and west of the county ('Birds of Devon,' 1891, p. 47). In August, 1886, I heard several in song in the deep elm-shaded lanes about Croyd and Patsborough, and at Berrynarbon, North Devon, and saw a hen bird at the last-named place. The Cirl Bunting must be numerous in one locality in South Devon, as live examples were advertised in 'The Bazaar,' a few years ago, at 1s. 6d. the pair! Mr. E. A. S. Elliot, of Kingsbridge, South Devon, sends me the following interesting notes:—"The locality where Montagu first obtained specimens, Jacket or Thicket Wood, is just the same now as it was 100 years ago, consisting of an acre or two of gorse, hazel, and rough uncultivated ground in close proximity to a few cottages and a large quarry, which is still worked in consequence of the excellence of the stone for building purposes." Mr. Elliot took a Cirl Bunting's nest close to this spot nearly thirty years ago, the eggs from which are still in existence. From fifteen years' observation of the Cirl Bunting, he has arrived at the following conclusions:—"That, although indigenou, it is distinctly migratory, the local birds being largely augmented about the middle of April by birds from the Continent. These birds, the males, are distinctly brighter in colour than birds obtained just previously in the neighbourhood. . . . I find the Cirl Bunting prefers the neighbourhood of the sea or estuary."

CORNWALL. — The late Mr. E. H. Rodd considered it "a common bird, generally, in Cornwall, and particularly so in the neighbourhood of Penzance." It has once occurred in the Scilly Isles in December ('Birds of Cornwall,' pp. 52, 300). Montagu mentions one in the collection of Colonel George, of Penrhyn, shot near that place (near Falmouth). The Rev. M. A. Mathew tells me:—"It is common throughout Cornwall. I have lately received a nest and eggs from the neighbourhood of New Quay." Mr. H. St. B. Goldsmith saw and heard it in April, 1891, in North

Cornwall, and it was reported to him as common about Liskeard. Mr. Arthur H. Macpherson saw one near Bude, one day he was in Cornwall in the spring of 1891.

DENBIGHSHIRE.—Mr. C. G. Beale, of Edgbaston, gives me the following particulars of a very interesting isolated colony:—"The Cirl Bunting is common in that part of the valley of the Ceiriog, in Denbighshire, known as the Glyn Valley, which extends from Chirk to the village of Llansaintffraid-Glyn-Ceiriog, but commonest for about a mile below that village. I have spent a part of the summer and autumn of each year since 1875 in that valley, and although I felt sure that the bird I heard and saw sitting on the topmost branches of the large trees was the Cirl Bunting, I did not get a specimen until 1881, but since then I have obtained several, and possess skins." I may mention that Mr. Beale kindly sent a skin of a male for my inspection. He believes its local distribution is very limited, and continues:—"I never hear it four miles further up the valley, where I spend every autumn, and I have only once seen or heard it in the Dee Valley about Llangollen, three miles further northward, but in passing up and down the Glyn Valley it is always to be heard in the summer at the same points. I should say that its frequency is limited to a distance of two miles in length, and it likes the bottom of the valley" (*in litt.*, April, 1891). In a subsequent letter Mr. Beale enters more fully into the interesting point of the local distribution, and gives his means of observation. He writes:—"In 1875 I took a shooting in the Glyn Valley, and lived at a house called New Hall, visiting it frequently in spring and summer to fish in the Ceiriog. This continued until 1883, and I was frequently over at Llangollen (walking there) . . . never without keeping my ears and eyes open for birds. I only once heard the Cirl Bunting about Llangollen, but it was to be heard continually about New Hall, and it was from a row of tall spruce firs in front of the latter house that I got all my specimens at roosting time. In 1883 I moved four miles up the valley to Llanarmon Tower, which I still rent, and I drive ten miles to Chirk Station, often waiting about Chirk Park for trains. The bird is to be heard in the old district. I do not hear it at Chirk, and I am able to say with some certainty that as the valley rises up to Llanarmon from New Hall it does not occur. . . . I should say that New Hall is (I estimate) about 400 or 500 feet above the

sea level, and Llanarmon village, on the river level, is, I know, 850 feet above the sea."

MERIONETHSHIRE.—"One specimen near Bontddu"¹(Mr. F. C. Rawlings, 'List of Birds of Barmouth District,' 1887, p. 5).

BRECONSHIRE.—Mr. E. Cambridge Phillips, of Brecon, writes, "Very scarce. I think slightly increasing. First noticed by me on March 15th, 1888. Probably often mistaken for Yellowhammer." A nest with four eggs was taken on a hillside close to Brecon (the bird clearly identified), June 6th, 1890. A male was shot near the nest a day or two after, and another male seen (Capt. E. A. Swainson, Zool. 1890, p. 271). Capt. Swainson, in a letter dated April 15th, 1891, gives me the following interesting additional particulars:—He could state that it was then to be observed in some at least of its former haunts. On April 4th he heard one singing in his garden, for the first time since the previous August. He had a good view of it, and had heard it daily since. The Cirl Bunting frequented the same locality as the one shot in June, 1890. On April 7th he heard another Cirl Bunting about a mile from Brecon, and is inclined to think this species was a fresh visitor to the district in 1890, and only occurred there in recent years previously as a straggler. He did not observe it there in the winter of 1890-91.

CARDIGANSHIRE.—Capt. Swainson heard the song in two places close to Aberystwith, July 23rd, 1891, and shot an adult male there (Zool. 1891, p. 353).

No instance is known to Mr. E. H. Jones, as he informs me, of its occurrence in north-west RADNORSHIRE.

GLAMORGANSHIRE.—Mr. Cambridge Phillips says that his remarks as to Brecon apply to this county also. Mr. D. W. S. Nicholl mentions two occurrences—one as long back as 1876, and a male near Cowbridge on April 4th, 1889 (Zool. 1889, p. 168). A pair was seen at Porthkerry, near Barry, Cardiff, for some weeks in the spring of 1889 (Zool. 1889, p. 233), and they bred there in 1891 (Rev. W. E. R. Allan, 'Field,' Aug. 15th, 1891).

PEMBROKESHIRE.—The Rev. Murray A. Mathew writes:—"It was unknown as resident, and only an accidental visitor at long intervals. There were specimens in Lord Cawdor's collection at Stackpole, obtained near Tenby, and these are the only instances of its occurrence in the county of which I have knowledge.

SCOTLAND.—In Scotland the Cirl Bunting appears to be only a rare straggler. Mr. R. Gray records a specimen shot near Yetholm, in Roxburghshire, about 1840, and a male shot near Banchory, in Aberdeenshire, in December, 1863 ('Birds of W. of Scotland,' p. 132). Mr. Edward recorded the occurrence of one in Banffshire (Zool. 6598); and in his 'Fauna of Banffshire' ('Life,' by Smiles), he says, "Very rarely found in this quarter." Yarrell writes, "the shooting of one near Edinburgh was announced by the late Prof. James Wilson so long ago as 1816 (Mem. Wern. Soc. ii. p. 658)." In Col. H. M. Drummond Hay's 'Report on the Ornithology of the East of Scotland,' p. 8 (for a copy of which I am indebted to the kindness of the author), is the following entry:—"The nest and eggs of this species are said to have been found on Moncreiffe Hill, near Perth; but the bird has never been got (*vide* Mr. J. Stewart, Perth)." Mr. W. Evans, of Edinburgh, writes that it "can only be regarded as a very rare casual visitant."

IRELAND.—The Cirl Bunting was recorded as having been seen at Wexford by Mr. Blake Knox (Zool. s. s. p. 95), but Mr. A. G. More, in his latest edition, has excluded it from the Irish list.

In conclusion, I may add that my remark, at the bottom of page 121, is not intended to imply that this bird is especially abundant in elm-growing districts, but merely to indicate its fondness for tall elms. In some strongholds of the Cirl Bunting the oak is the prevailing forest tree, and in others frequented by it the beech abounds.

NOTES ON MARINE MOLLUSCA COLLECTED ON THE COASTS OF DONEGAL AND DUBLIN.

BY H. CHICHESTER HART, F.L.S.

(Concluded from p. 141).

Janthina rotundata, Leach.—Donegal: frequently blown on various parts of the coast in summer and autumn. I have gathered some near Horn Head, and also at the Bottom Shore, and at Carrablagh, in Fanet.

Natica catena, Da Costa (*N. monilifera*).—Dublin and Donegal, common.

N. alderi, Forbes (*N. nitida*).—Dublin and Donegal, frequent
Adeorbis subcarinatus, Montagu.—Donegal: Mweelfinn, Sheep-
 haven. Apparently very rare in the north. My two specimens
 were not living. It occurs on the Scotch coasts as far as Aber-
 deenshire (Jeffreys).

Lamellaria perspicua, Linn.—Portmarnock; Kinnegar, Lough
 Swilly, and near Dunfanaghy.

Velutina lævigata, Pennant.—Portmarnock; Kinnegar, Lough
 Swilly, Dunfanaghy.

Aporrhais pes-pelecani, Linn.—Frequent on the shores round
 Dublin; Kinnegar strand, Lough Swilly, and near Carrigart;
 quite scarce in Donegal.

Cerithium reticulatum, Da Costa.—Rare on the shores about
 Dublin, but I have found specimens on South Bull, Portrane, and
 Portmarnock. Very abundant on shores of Lough Swilly, and
 forms chief ingredient of shell-sand in some places, quite taking
 the place of *Turritella*. Common near Horn Head.

Order SIPHONBRANCHIATA.

Purpurea lapillus, Linn.—Dublin and Donegal, common.

Buccinum undatum, Linn.—Dublin and Donegal, common.

Murex erinaceus, Linn.—Dublin, frequent. Donegal, scarce;
 but found all round the coast.

Trophon muricatus, Montagu (*Murex*).—North Bull, Dublin,
 not common.

Fusus antiquus, Linn.—Dublin, common.

F. gracilis, Da Costa (*F. islandicus*).—Dublin: South Bull,
 Portrane, and Portmarnock, not unfrequent. Both these occur
 thrown ashore alive. I have not observed either *Fusus* on the
 Donegal coasts.

Nassa reticulata, Linn.—Dublin and Donegal, not un-
 frequent.

N. incrassata, Ström.—Dublin and Donegal, common.

Defrancia gracilis, Montagu (*Mangelia*).—North Bull,
 Dublin.

D. leufroyi, Michaud (*Mangelia*).—Portmarnock, Dublin.

D. linearis, Montagu (*Mangelia*).—Mweelfinn, Sheephaven.

Pleurotoma costata, Donovan (*Mangelia*).—Dublin: Port-
 marnock strand, opposite Baldoyle.

P. brachystoma, Philippi (*Mangelia*).—Dublin, with the last.

P. nebula, Montagu (*Mangelia*).—Dublin, with the last, and at Howth, South Bull, &c., frequent.

P. rufa, Mont. (*Mangelia*).—Dublin and Donegal, frequent.

P. turricula, Mont. (*Mangelia*).—Dublin and Donegal, frequent.

Cypræa europæa, Mont.—Dublin and Donegal, common. In the latter county Innishowen Head, Kinnegar (Lough Swilly), Melmore, Mweelfinn, Doaghbeg (Lough Swilly), may be cited as having good strands for cowries.

Order PLEUROBRANCHIATA.

Cylichna acuminata, Bruguiere.—Portmarnock, very scarce.

C. cylindracea, Pennant.—Dublin: Portmarnock and South Bull, scarce. Donegal: Kinnegar strand, and Inch Island, Lough Swilly.

Utriculus truncatulus, Brug.—Portmarnock, opposite Baldoyle.

U. obtusus, Mont.—Portmarnock, with the last.

Acera bullata, Müller.—Dublin: Baldoyle and Swords, muddy coasts. Donegal: abundant on mud at Inch Island, opposite Fahan Station, Lough Swilly.

Actæon tornatilis, Linn. (*Tornatella fasciata*).—Dublin: North and South Bulls, Portmarnock and Howth. Donegal: Kinnegar strand, near Rathmullan, but scarce. Derry: Magilligan.

Scaphander lignarius, Linn.—Dublin, frequent. Donegal, scarce; Kinnegar, &c.

Philine aperta, Linn.—Dublin: 'Velvet strand,' Portmarnock. Donegal: Kinnegar, Lough Swilly.

Aplysia punctata, Cuvier.—Dublin: Howth. Donegal: Doaghbeg, Fanet; Marble Hill, Sheephaven. Living near low-water mark.

Order PULMONOBRANCHIATA.

Melampus bidentatus, Mont.—Donegal: Mweelfinn, Sheephaven; and var. *alba*.

M. myosotis, Drap. (*Conovulus denticulatus*), Var. *ringens*.—Dublin: Howth, rocky places at 'The Cliffs,' south side of the Hill.

MEMOIR OF THE LATE H. W. BATES, F.R.S.

FROM the official position so long held by Mr. Henry Walter Bates, as Assistant Secretary of the Royal Geographical Society, few men were better known in scientific circles than he was.

Everyone who contemplated travelling (in the proper sense of the word) made a point of consulting him before starting, and on their return would seek his advice as to the best mode of utilising and making known the results of the experience they had gained.

Mr. Bates was not merely a geographer; he was also a traveller, and a very distinguished one. He knew by experience some of the difficulties and obstacles that have to be encountered by explorers of tropical countries, and the advice which he was able to give to intending voyagers was on this account all the more valuable. Moreover he was a naturalist by choice and inclination, and although, as is the fashion now-a-days, he was of necessity a specialist (his knowledge of Coleoptera placing him in the first rank of entomologists), his general knowledge of zoology, much of it gained by personal observation, rendered his opinion valuable when sought for by intending collectors. From his earliest youth his taste and zeal for natural history were made apparent, and were not to be extinguished by any of the rebuffs and difficulties which it were his fate to encounter.

Born at Leicester in 1825, the son of a manufacturer of that town, he was intended for a business career. In those days the education of tradesmen's sons did not extend beyond the age of fourteen, and at this age, as soon as he had left school, Bates was apprenticed to a hosiery manufacturer, Mr. Gregory, of Leicester. He had long hours to keep—from 7 a.m. to 8 p.m.—but this did not deter him from seizing every opportunity of improving his mind, both before he commenced his daily work, and after he had left off. Fortunately for him he was able to derive great assistance from an educational institution in Leicester known as the Mechanics' Institute. Here he had the benefit of a good library, and attended evening classes taught by competent masters, the result being that he eventually acquired a knowledge of Greek and Latin, French and English composition, which placed him in front of most of his fellow-students. It was no

uncommon thing for him to study till midnight, and yet he was up and out at daybreak for a country ramble.

Like most collectors he commenced with the Lepidoptera, but soon abandoned these for the Coleoptera, of which he speedily made a fine collection of British species, and every Saturday half-holiday found him scouring the neighbourhood of Charnwood Forest in quest of specimens, especially that part of it which was owned by the Earl of Stamford, who at that time was not a strict game preserver, and whose keepers therefore were not disposed to object to the occasional trespassing of a harmless naturalist. After a ramble of this kind, it was Bates's practice to describe and sketch the most notable insects captured by him, and this habit no doubt contributed largely to give him that facility for writing which was subsequently so useful to him when travelling abroad. The results of his observations around Leicester and in Charnwood Forest were from time to time published in 'The Zoologist,' in which journal his earliest communication appeared on p. 114 of vol. i. in 1843. This had reference to "Coleopterous Insects frequenting damp places," and was succeeded by several short notes, until his departure from England temporarily interrupted communication.

On the death of Mr. Gregory, to whom he was first apprenticed, he obtained a clerkship at Burton-on-Trent in the office of Messrs. Allsopp. It is not surprising to learn that this post was anything but congenial to his taste, and we can well imagine his delight when the time came for him to leave England in company with his friend Mr. Alfred Russell Wallace on his memorable expedition to the Amazons.

Although zoology was the primary object of this expedition, much geographical and ethnological information was acquired. Messrs. Bates and Wallace arrived at Para on the 26th April, 1848, and Bates resided there nearly a year and a half, making it his head-quarters, from which he started on short excursions into the interior, returning to refit, and despatch his collections to England. At Para he remained until the 6th November, 1851, when he started on his long voyage to the Tapajos and the Upper Amazons which occupied a period of seven years and a half. The narrative of his adventures as detailed in his delightful work, 'The Naturalist on the Amazons,' will of course be familiar to all readers of this Journal.

On the 17th March, 1859, Bates returned to Para, "a wreck of his former self." No constitution could withstand the continued strain of climate, poor living, frequently actual hunger and exposure which he so long endured; and it is evident that nothing but physical prostration brought about his long deferred return to England, which he reached in a condition which rendered him more or less an invalid for the rest of his days.

During the eleven years that he passed in South America, several articles from his pen appeared in 'The Zoologist.' The first of these, on the habits of the Douroucoulí Monkey, dated Para, Oct. 7th, 1851, was published in 'The Zoologist' for 1852 (p. 3324), and was succeeded shortly afterwards by a most interesting article entitled "Some Account of the Country of the River Solimoens or Upper Amazons" (tom. cit. pp. 3590—3599). This was followed at intervals by extracts from his journals, as in the volumes for 1853 (pp. 3726, 3801, 3841, 3897, 4113); 1854 (pp. 4200, 4318, 4397); 1855 (pp. 4549, 4800); 1856 (p. 5012); 1857 (pp. 5557, 5657, 5725), and 1858 (p. 6160); and these may be said to have paved the way for the preparation of the comprehensive work which he prepared on his return, 'The Naturalist on the Amazons,' published in 1863. We have only to turn to this to discover the nature and extent of the services rendered by Bates to zoological science, more especially in the department of entomology. The collections of insects which he formed and sent home were enormous. During one excursion only, of five months, to St. Paolo he collected more than 5000 specimens, amongst which were 686 new species of all orders, and 79 new species of diurnal Lepidoptera!

Mr. Bates, however, cannot be regarded as a mere collector. He was a philosophic naturalist of the first rank, and was the first to enunciate the theory of Mimicry. He observed that butterflies belonging to certain genera were unpalatable to certain birds, and were left untouched by them, while others belonging to genera usually preyed upon by birds were not unfrequently so like the objectionable species as to be mistaken for them. From these facts he formulated the theory that in proportion as the edible species resembled those that were objectionable, they escaped destruction, and lived to perpetuate their kind. Of these, again, the individuals which most resembled the distasteful species would be the best preserved, until at length so perfect a

mimicry was established that the edible species were well protected. These views were ably worked out in an important paper published in the 'Transactions of the Linnean Society' for 1862, vol. xxiii, pp. 495—566, with two plates of coloured figures designed to show a few examples out of a great number of mimetic analogies between various Lepidopterous insects and the Heliconidæ, and illustrating also the process of the origination of a mimetic species through variation and natural selection.

In 1864 Mr. Bates contributed to the Journal of Entomology an important paper on the classification of the Rhopalocera, which was an enlargement and elaboration of previously published views. Of this paper Mr. Distant has remarked that "it is a model of the philosophical treatment of a purely systematic subject," adding that "the arrangement proposed by Mr. Bates has since been universally followed, and this in recent years, when a large number of faunistic works on the Rhopalocera have been written in various lands, and with a wealth of material formerly unknown. His classification reversed the previously understood sequence in the families, and still remains the most philosophical and natural system yet attained in the arrangement of any order of the Insecta."

After his classic book of travels, foremost amongst his publications in scientific importance must be reckoned his contributions on the Coleoptera (in 3 vols. 4to), to Godman and Salvin's 'Biologia Centrali Americana.' He contributed also to Stanford's 'Compendium of Geography and Travel,' a volume on "Central America, West Indies, and South America," which has passed through several editions. He edited for Messrs. Cassell a valuable series of volumes entitled 'Illustrated Travels,' and wrote the section on Coleoptera in Cassell's 'Natural History,' edited by the late Professor Duncan. In addition he contributed a great number of papers, chiefly on entomology, to various journals and to the Transactions of scientific societies.

Of these we may especially mention "Some particulars in the Natural History of the *Termites*," Linn. Soc. Journ., 1854, p. 333; "Observations on the habits of two species of *Mygale*," Proc. Entom. Soc., 1855, p. 99; "Notes on South American Butterflies," 1857, Trans. Entom. Soc. vol. v., 1858, pp. 1—11; and a "Description of a remarkable species of singing Cricket

(*Locustaria*), from the Amazons, supposed to be new to science," *Journal of Entomology*, 1862, vol. i, p. 474.

It has been said of him by a well-known entomologist that as a collector, a field naturalist, a philosophical observer, and a systematic writer, Mr. Bates has equally filled a commanding position in the science he loved so well, and with this rare combination of endowments it may be claimed for his memory that he was probably the greatest, and certainly the most respected, entomologist of his time.

As to the services which he rendered to the Geographical Society during the twenty-seven years in which he filled the post of Assistant Secretary, their value may be estimated from the highly complimentary testimony* of Mr. Clements Markham, C.B., F.R.S., who became Honorary Secretary of the Society in 1863 (the year before Mr. Bates was appointed Assistant Secretary), and held the office for twenty-five years. "It would be difficult," he says, "to estimate the benefits that the Society has derived from the services of Mr. Bates since he became its Assistant Secretary in 1864, because they made themselves felt in so many directions and in so many ways. . . . His usefulness was perhaps most felt in the assistance and advice he gave to travellers, and indeed to anyone who came to him on geographical business. They invariably found in him not only a man ready to impart information and advice, but a trustworthy and sympathising friend."

Of honours Bates received many. Perhaps the one most valued was the order bestowed on him by the Emperor of Brazil in recognition of his services as an explorer. He was a Fellow of the Entomological Society (of which he was twice President), of the Linnean Society, and of the Royal Society, to which latter dignity he was elected (too tardily) in 1881.

* *Proc. Roy. Geogr. Soc.*, April, 1892, pp. 254—255.

NOTES AND QUERIES.

Churchwardens' Accounts at Dry Drayton, Cambs.—I forwarded you some statistics concerning the Moles, Sparrows, Polecats, &c., killed towards the latter end of the last century in my old parish of Dry Drayton, Cambs. I applied some months since to one of my former parishioners for more recent evidence as regards the occurrence of these animals, and have just received his reply, from which I subjoin extracts:—"We have not destroyed any quantity of Sparrows the last ten or fifteen years; but I see by reference to an old book of my father's that a portion of the money received for the letting of roadsides was applied to buying Sparrows, and as much as £7 and £8 was so spent, the price being a halfpenny each, and eight eggs for a penny, so that a great many were thus destroyed. The Stoat, *Mustela erminea*, is not at all numerous, though I have killed several; and as to Hedgehogs, I should think during the last ten years my little dog "Dot" has killed as many as 200, some very large ones. The Polecat, *M. putorius*, has not been seen here for some time, but Willmot says that he caught some here in 1860 or thereabouts in the Blackthorn. Two were taken at Moor Barns, near Madingley, about three years ago, by Mr. G. Bull while ferreting rabbits." "Blackthorn" is a spinny of several acres in extent on Dry Drayton glebe, and Madingley is the adjoining parish to Dry Drayton. "There have been a great number of Moles killed here during the last ten or twelve years. I have had five dozen caught since the 1st February last, and John Willmot is always employed by Mr. Papwith and Mr. Rutter. I should think there have been from 150 to 200 per annum killed; they have been very numerous, but such a number has thinned them a bit." You may possibly find some of these statements worthy insertion in 'The Zoologist.'—F. A. WALKER (Cricklewood, N.W.).

MAMMALIA.

The Fox in Australia.—Notwithstanding the serious lesson taught by the introduction of the Rabbit into Australia, the colonists there have not learned wisdom from the past, and are only now beginning to realise the error which has been committed by the subsequent introduction of the Fox. An Australian contemporary now writes as follows:—"The introduction of Foxes into Australia was a grave mistake. They have already spread over a wide area in this colony, and have been and are most destructive both to lambs and poultry. In some localities the farmers, I am informed, cannot keep poultry, and for years past on some pastoral estates it is well known the rearing of lambs has had to be abandoned. Foxes attain greater size and strength here than in England, and the mild climate is highly favourable in

increasing their numbers. Great sums have been expended in exterminating the Australian Dingo throughout the pastoral districts, and although it still exists in mountainous forest districts, it seldom ventures outside of them. From my own experience, in the early days of this colony, I know that in the Dingo we had a most destructive enemy to deal with prior to the introduction of strychnine. By the reckless introduction of the Fox, flock-owners and farmers have got a worse enemy than the Dingo to fight against. It must be very disheartening to all who have stock of any kind to lose to find themselves confronted by some new enemy introduced by thoughtless or selfish persons. If some energetic steps are not soon taken, nothing can prevent the spread of Foxes over the whole continent. Just as if the Rabbit plague was not a sufficient scourge, we must introduce Foxes! It is very instructive to notice how mischief is worked by disturbing natural laws. The Dingo was a useful animal before settlement. We introduced sheep and cattle, and Dingoes were, thus multiplied because they were well fed. We hunted and trapped them, and at last exterminated them. In doing this we accidentally poisoned Crows and millions of Kites, which latter used to come south from Queensland every summer, till they, too, became exterminated, and with their extermination the chief destructive enemy of grasshoppers perished, and thus the farmers' crops are destroyed by the multiplication of insects."

Wild Cat in the West of Scotland.—On the 18th February last, I received from the Western Highlands a splendid example of the Wild Cat, *Felis catus*, which had been trapped in the mountains the day previous. It is a full-grown female in excellent condition, the fur being remarkably soft and long. It measured three feet in length from nose to tip of tail. I may state that in dissecting two of these animals, I find they have only eighteen caudal vertebræ, while, I believe, there are twenty-two or more in *Felis domestica*.—WM. YELLOWLY (South Shields).

The Marten in Surrey and Lincolnshire.—Seeing that you are making a list of localities in which the Marten has been found, it may interest you to know that I saw a Marten in a wild state in a big wood, composed chiefly of fir trees, near Dorking, on the 12th May, 1879. The beast was hunting down the hillside amongst the bracken and stumps. I did not see the colour of its chest, as it had its head down, but I particularly noticed its bushy tail. A rabbit bolted across the path a few yards below, and I imagined at the time that the rabbit was being hunted by the Marten. Mr. G. Adrian, a birdstuffer at Lincoln, told me that many years ago he hunted one of these animals in a big wood not far from Lincoln, and ultimately shot it out of a big oak tree. He had a dog with him, and had a most exciting chase before he secured it. If I remember rightly, he had several shots, knocking it down from trees, before he ultimately killed it.

He also told me that these large woods (I think they are now mostly felled) used to be favourite nesting places for Kites and Buzzards, and he used to take their eggs there. The late Mr. Wolley, in his 'Ootheca Wolleyana,' mentions having obtained Kites' eggs from Lincolnshire, from Mr. G. Adrian. These would doubtless be some of the eggs to which Mr. Adrian referred.—G. E. LODGE (5, Verulam Buildings, Gray's Inn).

BIRDS.

Albinism in Birds and Mammals.—I have been much interested in the discussion on albinism commenced in 'The Zoologist' last year by Mr. Jenner Weir, but confess I am rather puzzled by its present position. In your last number (p. 142) Mr. Weir says the object of his former note in 'The Zoologist' was to controvert the statement that "the eyes are pink in all albinos," whereas it left on my mind the impression that it was written to show that "no albino birds have pink eyes." This was the impression I derived from his letter to 'The Field,' and also from his communication on the same subject to 'Nature Notes'; but possibly I may have missed his point. Anyhow, it is well known that there are white animals with pink eyes, and white animals without pink eyes; and coloured animals with and without pink eyes. But whether an animal is an albino or not, depends entirely on the definition of albinism. If a writer considers a white bird with normally coloured irides to be an albino, surely his first step is to tell us what he understands by "albinism." It is useless to reopen a discussion as to whether certain examples fall within a certain class, if different views are held as to what constitutes that class.—A. HOLTE MACPHERSON (51, Gloucester Place, Hyde Park, W.).

Albinos and White Varieties.—Mr. Jenner Weir says that I appear to "admit the probability of some albinos having other than pink irides by using the words 'almost always.'" Most certainly I was aware that they have. The irides of albinos are sometimes almost colourless and sometimes light blue. This was the reason I worded my note in that way. It is not a case of admitting the probability. It was solely Mr. Jenner Weir's previous statement that he had "never seen a single instance of an albino bird having pink eyes" (Zool. 1891, p. 358), which evoked my note on this subject.—O. V. APLIN (Bloxham, Banbury, Oxon).

Notes on Donegal Birds.—I have to thank Mr. Ussher for calling my attention to the fact that the following species have been omitted from my list of the birds found in Donegal, namely, Goldfinch, Twite, Linnet, and Shoveller. For the omission of the first three I must plead carelessness, for they are all familiar species in this county. The Goldfinch is the least common; I have seen it about Belleek, Killybegs, and Fintra, on the west side of the county, and at Rathmullan, on the east side, always in small

flocks in late summer, and I have no evidence of the nest having been taken. The Linnet is common and resident, breeding in many places. The Twite is not infrequent in most parts of the county where there is an upland of peat, and I have taken the eggs at Carrablagh. Of the Shoveller I had no positive information. Mr. Ussher, however, informs me that he obtained a nest of Shoveller's eggs last year from Lough Swilly.—H. C. HART (Carrablagh, Portsalon, Letterkenny).

Great Northern Diver in Donegal in August.—In reply to the queries of Mr. Warren, which Mr. Hart has forwarded to me, I beg to say that the Great Northern Diver referred to by Mr. Chichester Hart (p. 109), which I shot in Arranmore Road, near Dungloe, in August, 1884, was an adult bird in the moult. I believe it is in the Belfast Museum, as I gave it to a Mr. Herdman, who forwarded it to Mr. Lloyd Patterson, who I fancy had it stuffed. A good number of years ago I saw a skin of a Black-throated Diver in mature plumage; others I have seen have been in the immature state.—R. W. NORMAN (Fahan, Londonderry).

Imitative powers of the Starling.—The remarks which your correspondents have offered on the imitative powers of the Starling (p. 150) tempt me to add that, in this district, the Starlings often reproduce the notes of the Oystercatcher and Curlew with wonderful accuracy. On the 3rd of April I was surprised to hear the call of the Landrail; it appeared to be the familiar "crake-crake" of that bird undoubtedly, but on further investigation I ascertained that a Starling was reproducing the call-note of the Rail, and that in full view of us: he had remembered his lesson of last summer remarkably well. To give another instance of the mimicry of this bird, I may mention that during severe weather in January last, a friend of mine (the Rev. H. A. Macpherson) was astonished one day to hear the call-note of the Common Sandpiper repeated with such nicety as to completely deceive him, until the Starling was detected in the act of rehearsing this summer cry.—D. LORT THORPE (41, Aglionby Street, Carlisle).

White Wagtail in Suffolk.—The hen White Wagtail which reared its young here last year, as recorded by me (Zool. 1891, p. 314), has returned this spring, and built a nest in exactly the same place in the pyracanthus which she chose last year. On April 17th it contained three eggs. I first noticed her on April 6th, and felt certain, both from her actions and plumage, that she was my old friend of last year; now the situation of her nest seems to place her identity beyond doubt. My brother has seen her mate, and describes him as a dark Pied Wagtail. Last year, when the first brood had flown, we pulled out the old nest, and they built another in the same place, in which they hatched three more young ones. These, however, all died, possibly from the injudicious handling they experienced from one of our friends, but four or five of the first brood got off, and

possibly have puzzled some naturalist elsewhere.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Iceland Gulls and Wild Swans in the Moy Estuary.—During the past winter Iceland Gulls have again visited the bay and estuary, after an absence of five years, the last having been observed and shot on Nov. 9th, 1887—a young bird in the first year's plumage. On the 9th January last, when walking in one of my fields along the shore, a fine bird of this species, in the creamy white plumage of the second year, flew close past me. It was a very large bird, with such an expanse of wing that at first I thought it was a Glaucous Gull, but afterwards, considering its gliding flight, I concluded it must be an Iceland Gull. The following day I saw what was probably the same bird standing on a rock at low tide near the same place, and this was certainly an Iceland Gull. Again on Feb. 3rd, on the shore at Carrahubbock, a mile north of Enniscrone, where I had gone in search of shells, I observed another bird of this species amongst some Herring Gulls swimming in a rock-pool; and, as Iceland Gulls usually are, it was very tame and unsuspecting, allowing me to approach within forty yards, and examine it with my glass, with which I was able to identify it by comparing its size with that of a young Herring Gull standing near it, and also, by seeing quite distinctly, that the tips of the closed wings extended considerably beyond the tail,—an unfailing mark of distinction between the Iceland and Glaucous Gulls, the wings of the latter bird barely reaching to the end of the tail-feathers. On the 5th, as it was blowing hard from the W.N.W., and far too wild for punt-shooting, I walked to Enniscrone to look out for the Gulls, and as the wind and tide drifted everything into the little bay by the Bath House, a large number of Gulls had collected there, chiefly Herring and Great Black-backs, to feed on the floating refuse, and as there were over a hundred birds crowding the little bay they made a tremendous row, screaming and fighting over the floating food, and in the middle of the crowd of Gulls three Icelanders were easily recognised by their cream-coloured plumage and buoyant, gliding flight. I remained a long time observing them, but was successful in obtaining only one bird, and although I have been for several miles along that part of the coast since, I have been unable to see them again. Having had a fall of snow and seven degrees of frost on the 17th, I got out my punt and gun the following morning, expecting to find a large number of ducks driven out of the bogs by the frost, but was disappointed, seeing only a few pairs scattered about the back channel by Rinroe. However, when I got down as far as Scurmore Icehouse, I saw a few Wigeon feeding in the sea-weed, but they made off long before I got within shooting distance; and a little below them I observed a Duck and two Mallards feeding along the edge of the water, and very quiet, until a Redshank

sounded the alarm, but then they swam out a little, and kept watching the punt until I got within range, when I fired, killing the Mallards, the Duck getting away badly wounded, and when looking in the direction the Duck went, I was surprised to see a pair of splendid Wild Swans about half-a-mile away, resting in the shallow water on the point of a sand-bank, and although with their heads up looking about them, were evidently not frightened by the noise of the gun. Having picked up the Mallards, and loaded quickly, I paddled on to the Swans, but was unable to get right on to them, for a long sand-bank extended along the channel for half-a-mile between me and them, and while trying to get round this, the broad-side of the punt was in view of them for a long time, and made them so wary, that when I got within 200 yards they left the point and swam into deeper water. I then took a good look at them with my glass, and saw they were evidently adult Bewick's, and when shortly after they rose and began calling, their musical cry of "hong-ong-ong" proved them to be of that species. After rising they flew further up the channel for nearly a mile, and pitched alongside the bank, but as the tide was ebbing too strong to work against it, I was obliged to leave them until the return flood later on. I then went on to Bartragh, and saw about 200 Wigeon feeding along the edge of the Sloak Rock, but although I got within shot of a few stragglers, I did not fire, expecting to get within range of the main flock, but unfortunately a bird that was outside of them took alarm and sent them all up. However, after circling round they all pitched again alongside the opposite bank; but although a number walked up to rest on the bank, they did not let me come within range again, and all went out to the bay when I attempted to get near them. The tide was then flowing, so I turned my attention to the Swans, which had then been resting on the bank for nearly two hours; so I quietly paddled up the channel, and saw the two birds sitting on the sand about twenty yards from the water, one of them apparently asleep, but the other on the watch, occasionally stretching up his head and looking round. Seeing them so quiet I was confident of getting a shot; but unfortunately two Cormorants, taking alarm at the punt, rose off the bank, and flying close over the Swans, roused them up, and on looking at the approaching punt, they walked off the bank and began to swim away. I still continued paddling, and when I got within about 200 or 250 yards they rose, calling as they went, and pitched again about a quarter of a mile further up, and again went on to the bank; when they settled down I again paddled up, but this time they did not let me get within 300 yards when they rose and fled in the direction of Killala. I was surprised at their being far wilder than either Ducks or Wigeon. They called on each occasion when rising, and it was the same musical toned note "hong-ong-ong," so very different in sound from the "whoop, whoo-whoop" of *Cygnus ferus*.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

Notes from Norfolk in 1891.—I am able to add a few notes to those of Mr. J. H. Gurney (p. 56). I spent a fortnight during October at Hunstanton, arriving there on the evening of the 8th. I learned from the boatmen that waterfowl, during the winter of 1890 and 1891, had been very abundant, Common Scoters having been numerous, and for several weeks during the hard weather a large flock of Scaups had remained about a mile off the pier-head. On one day a small flock of Swans appeared, from which my informant secured three specimens. I am uncertain as to their species, but think they were Whoopers. Another gunner had shot several Swans during the frost near the harbour at Holme. Before the commencement of winter a good flight of Woodcock reached the sand-hills near Thornham Marsh, and many birds were secured. During my visit the weather was very stormy, except on three days, the wind blowing principally from the west; from the 11th to the 19th it was very violent, and was on several occasions accompanied by heavy rain. In spite of these unfavourable climatic conditions, migration was evidently in progress amongst the smaller birds, for Chaffinches, Linnets and Greenfinches were passing in large numbers. I also noted a few flocks of Twites, and twice I identified flocks of Sparrows which appeared to be immigrants. Starlings and Sky Larks were not passing in anything like the numbers I had observed at the corresponding period in 1889. I noted a few Mistle Thrushes, but other Thrushes were absent. I was rather surprised to see so much movement in progress amongst the smaller birds during the prevalence of such violent gales. Most of the flocks were flying low, having apparently struck the coast more to the east; but on the roughest day of all I saw many flocks actually arrive at the beach opposite the town itself. These birds appeared to be flying at a great elevation until they neared the shore; possibly they found the wind less violent above. From one of these flocks of finches five Coal Tits dropped down into a dense thorn hedge. Unfortunately, I did not try to shoot one of these birds; but at the time I was not aware that Messrs. Gurney and Booth had never met with this species as a migrant on the Norfolk coasts (*cf.* Saunders' Manual Brit. Birds, p. 97). To which form of Coal Tit these birds belonged, of course it is now impossible to say with certainty, but it is highly probable that they would have proved to be the continental variety. In Notts, during October and November, many Coal Tits visit us, where at other times they are scarce. I have shot several which I thought approached the continental variety described by Mr. Seebohm. A friend, however, who has examined them thinks they are hardly grey enough on the mantle. Perhaps the movement in Notts is a comparatively local one. I saw other Coal Tits with Goldcrests in the gardens near the beach at Hunstanton: I also saw one or two others passing by with the flocks of finches. Amongst other birds noted were a few Goldfinches, Rock Pipits, and Wheatears. Snow

Buntings were very scarce, apparently not having arrived in any numbers. The first Hooded Crows were only just appearing; shore birds, too, were uncommon, with the exception of the Ringed Plover. On the marsh at Thurnham were plenty of Curlews, with a few Dunlins and Redshanks, and I secured a specimen of the Whimbrel which appeared to have been previously wounded. Oystercatchers were fairly numerous on the beach, but I only saw one Grey Plover. A flock of Golden Plover, I was told, had remained a few hours on the flat at Snettisham on the 6th, but I did not see a single specimen. The Woodcock had not arrived up to the date of my leaving, and a long round on the marshes only resulted in one Snipe being flushed. On the 17th a fair number of Lapwings came in; they appeared to be just flying over the surface of the water about a quarter-of-a-mile distant from the shore. On the 19th two large flights of Scoters arrived during a heavy storm of rain. On the 20th I was able to get off in a boat, spending the best part of the day about a mile from the shore. Birds were not numerous; but I noted a few Common Scoters (mostly adults), two or three immature Red-breasted Mergansers, a few Puffins, young Gannets, and Red-throated Divers. About a fortnight previously my boatman told me that this species was very numerous. I also saw a Grebe or two, apparently the Red-necked species, though I did not get a very near view. As the tide fell, large numbers of Curlews passed overhead on their daily journey to the Wolferton mud-flats. Two Terns appeared, one of which was a Sandwich Tern—rather a late bird. House Martins were not uncommon; they appeared to be crossing the Wash from the Lincolnshire coast. Swallows were fairly common throughout my visit. Amongst the Gulls the commoner species were fairly abundant, though the three larger ones (*marinus*, *fuscus*, *argentatus*) were in the minority.—F. B. WHITLOCK (Beeston, Notts).

Bitterns in Bedfordshire.—On the 29th December last a Bittern was shot close to the town of Bedford, another on the River Ouse at Wellington, four miles from Bedford, and a third, I regret to say, early in February at Silsoe, on Earl Cowper's estate.—J. STEELE ELLIOTT (Park Road, Sutton Coldfield).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 7, 1892.—Prof. STEWART, President, in the chair.

Prof. D'Arcy Thompson and Mr. W. Somerville were admitted Fellows.

Mr. Spencer Moore exhibited and made remarks upon some samples of Maté, or Paraguayan Tea, recently brought by him from South America.

Mr. J. Tristram Valentine exhibited a skin of Grevy's Zebra, recently

brought from Somali-land by Mr. W. H. D. Merewether, who had purchased it from a caravan arriving from the southern Dolbahanta country to the S.E. of Berbera. Although it corresponded in the character and disposition of the stripes with the type specimen from Shoa, and with a skin in the British Museum from Berbera (Proc. Zool. Soc. 1870, p. 413), it differed in the stripes being brown upon a pale sandy or rufescent ground, instead of black upon a white ground. It was suggested that this might be the desert form, the type specimen representing the mountain form.

Mr. Tristram Valentine also exhibited horns of Swayne's Hartebeest and Clarke's Antelope (both recently described species), which, like the Zebra-skin, had been lately brought from Somali-land by Mr. Merewether.

Mr. W. S. D'Urban exhibited specimens of the Shell-slug, *Testacella maugei*, from Devonshire.

A paper was then read by Mr. D. Morris, "On the phenomena concerned in the production of forked and branched Palms," the conclusions arrived at being the following:—(1) Branching is habitual in certain species of *Hyphane*; occasional in others, and occasional also in the genera *Areca*, *Rhopalostylis*, *Dictyosperma*, *Oreodoxa*, *Leopoldinia*, *Phœnix*, &c. (2) Branching in many cases results from injury to, or destruction of, the terminal bud causing the development of axillary or adventitious buds below the apex; these buds when lengthened out produce branches. (3) In some cases, as in *Nannorhops ritchieana* and *Phœnix sylvestris*, branching is caused by the replacement of flowering buds by branch buds. In such cases the branches are usually short and are arranged alternately along the stem. The terminal bud is apparently neither injured nor destroyed.

A paper by Mr. A. W. Waters, "On the gland-like bodies in the Bryozoa," was, in the absence of the author, read by Mr. W. Percy Sladen.

ZOOLOGICAL SOCIETY OF LONDON.

March 15, 1892.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Mr. Sclater exhibited and made remarks on the skin of a Wild Ass obtained by Mr. J. D. Inverarity in Somali-land.

A report was read, drawn up by Mr. A. Thomson, the Society's Head-Keeper, on the insects bred in the Insect House during the past season.

Mr. Seebohm exhibited and made remarks on two pairs of *Picus richardsi* from the island of Tsusima in the Japanese Sea.

Mr. Oldfield Thomas exhibited and described a head (placed at his disposal by Messrs. Rowland Ward & Co.) of the East-African *Oryx*. This Antelope, commonly supposed to be the *O. beisa*, was shown to differ from

that species in possessing long black tufts on the tips of its ears. It was proposed to be called *O. callotis*.

Dr. H. Gadow read a paper on the Classification of Birds, in which the results arrived at, after a long study of the structure of birds for the purpose of completing the part "Aves" of Bronn's 'Thierreich,' were set forth.

A communication was read from Mr. C. Brunner v. Waltenwyl and Prof. J. Redtenbacher, containing a report on the Orthoptera of the Island of St. Vincent, West Indies, collected by Mr. H. H. Smith, the naturalist sent to that island by Mr. Godman, in connection with the operations of the Committee appointed by the British Association and Royal Society for the investigation of the fauna and flora of the Lesser Antilles.

Mr. Oldfield Thomas read a paper on a collection of Mammals from Mount Dulit, in North Borneo, obtained by Mr. Charles Hose. Fourteen species were represented in the collection, of which four were stated to be new to science. Amongst these was a new Carnivore of the genus *Hemigale*, proposed to be called *H. hosei*.

Dr. R. Bowdler Sharpe gave descriptions of some new species of Timeline Birds from West Africa.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 23, 1892. — Dr. DAVID SHARP, M.A., F.R.S., Vice-President, in the chair.

The Hon. Mrs. W. Carpenter, of Kiplin, Northallerton, Yorkshire; and Mr. S. G. C. Russell, of 19, Lombard Street, E.C., were elected Fellows of the Society.

The Secretary read a letter from the City of London Entomological and Natural History Society on the subject of a proposed Catalogue of the Fauna of the London District. The assistance of Fellows of the Society in the compilation of the Catalogue was asked for.

Mr. G. C. Champion exhibited a number of new species of Longicornia from Mexico and Central America, recently described by the late Mr. H. W. Bates, in his paper entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously recorded species," read at the last meeting of the Society.

Mr. S. Stevens exhibited three very rare species of *Noctua*, viz. *Noctua flammata*, *Leucania vitellina*, and *Laphygma exigua*, all taken by Mr. H. Rogers at Freshwater, Isle of Wight, in the autumn of 1891.

Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus* in which the left mesothoracic leg consisted of three distinct femora, tibiae, and tarsi, originating from a single coxa, which he had shown at the meeting on the 24th of February last. The specimen was now reversed,

to show the structural peculiarities, upon which Dr. Sharp, Mr. Champion and Mr. Jacoby made some remarks.

Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of *Hesperidæ*.

Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of Orthoptera recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by, Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher.

Mr. J. W. Tutt exhibited and remarked on a series of various forms of *Orrhodia vaccinii* and *O. (spadicea) ligula*.

Mr. C. G. Barrett exhibited and made remarks on a series of specimens—including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoria*. A long discussion ensued as to the probable causes of the variation exemplified, in which Mr. Tutt, Mr. Jacoby, Mr. Poulton, Mr. H. Goss, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part.

Mr. G. A. James Rothney sent for exhibition a number of specimens of *Camponotus compressus*, *C. micans*, *Ecophila smaragdina*, *Sima rufonigra*, *Solenopsis geminata* var. *armata*, and other species of Ants, from Calcutta, together with certain species of *Aphidæ* kept by them for domestic purposes; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled "Notes on certain species of Calcutta Ants and their habits of life."

April 13, 1892.—HENRY JOHN ELWES, Esq., F.L.S., Vice-President, in the chair.

Mr. Francis Jaffrey, M.R.C.S., of 8, Queen's Ride, Barnes, S.W., was elected a Fellow of the Society.

Mr. R. McLachlan exhibited specimens of *Anomalopteryx chaviniiana*, Stein, a Caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alluded to the *Perlidæ* as including species in which the males were frequently semi-apterous. Dr. Sharp enquired if Mr. McLachlan was aware of any order of insects, except the Neuroptera, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the *Bombycidæ* in which the wings of the male were inferior in size and development to those of the female.

Dr. Sharp exhibited specimens of both sexes of an apparently nondescript phasmid insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelles islands, together with *Phyllium gelonus*. He also exhibited specimens of

both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the *Phasmidæ*, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organisation to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in want of food a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the *Phasmidæ* are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mons. Henneguy had observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of *Phasmidæ* it was easy to obtain the egg by extraction from a dried specimen.

Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicolora*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis adippe* and *Cænonympha pamphilus*; also two specimens of *Apatura iris*, and two of *Limenitis sybilla* in which the white bands were entirely absent.

The Hon. Walter Rothschild exhibited, and contributed preliminary notes on, some hundreds of Lepidoptera, representative of a collection of some five thousand specimens recently made in five weeks, by Mr. W. Doherty, in the South-west of Celebes. The collection included species of *Nectaria*, *Ideopsis*, *Saletaria*, *Limnias*, *Radena*, *Tirumala*, *Euplæa*, *Lethe*, *Melanitis*, *Micalesis*, *Yphthima*, *Elymnias*, *Amathusia*, *Pseudamathusia*, *Discophora*, *Acraea*, *Ergolis*, *Cethosia*, *Cynthia*, *Cupha*, *Terinos*, *Cirrhochroa*, *Junonia*, *Precis*, *Rhinopalpa*, *Xoma*, *Cyrestes*, *Hypolimnas*, *Euripus*, *Rohana*, *Parthenos*, *Neptis*, *Athyma*, *Symphædra*, *Euthalia*, *Limenitis*, *Abisara*, *Huphina*, *Catopsilia*, *Eronia*, *Appias*, *Ornithoptera*, *Papilio*, &c., and several species of *Hesperidæ*. Many of the species were new, and others very rare. Mr. Elwes, Colonel Swinhoe and Mr. S. Stevens commented on the interesting nature of this collection, and a vote of thanks to Mr. Rothschild for exhibiting it was passed by the meeting.

Mr. E. B. Poulton gave a lecture "On the denudation of the Scales in certain Species of Lepidoptera," and illustrated it by a large number of photographs shown by means of the oxy-hydrogen lantern. Mr. G. F. Hampson, Mr. Elwes, and Mr. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*,

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NOTES ON THE ORNITHOLOGY OF NORTHAMPTONSHIRE FOR 1891.

BY THE RT. HON. LORD LILFORD, F.L.S., F.Z.S.

JANUARY.

1st. An adult female Scaup was picked up alive under the telegraph-wires near Thorpe Station, and brought to me. I could not detect any wound or outward injury, but the bird was so much exhausted, and so reduced in flesh, that I thought it better to kill it than to have it pinioned and put upon our fowl-pond. I also received a very fine male Kestrel alive from a tenant farmer at Slipton, with the information that it had been caught in his granary, to which it could only have attained access by the "cat-hole" in the door.

6th. I received a letter from Mr. Rowland Ward, informing me that on Dec. 24th, 1890, he had received, for preservation, a Bittern from Mr. T. W. Thornton, of Brockhall, near Weedon. I subsequently heard from Mr. Thornton, in reply to my request for details, that this bird was shot from some sedges at the side of a pond in front of the house at the place above mentioned on Dec. 13th ult. The Rev. Frederick M. Stopford informed me that, two or three days before, he had seen a Great Titmouse dragging about a half-dead Redbreast in a fence by the roadside near Thrapston. This is by no means the first instance that has come to my knowledge of the murderous propensities of *Parus major* in severe weather.

7th. Mr. William Bazeley, of Sheep Street, Northampton, wrote, under this date, to inform me that he had recently received, for preservation, from Maidwell, a Bittern "much reduced by starvation," killed on 24th ult.

11th. A flock of about twenty Geese going over "upwards" (*i. e.* in a S.W. direction), reported by R. Cosgrave.

16th. A Swan passed high over the house "downwards" (*i. e.* to the N.E.).—R. C.

20th. Complete thaw, after more or less severe frost since 2nd inst. A lady staying with us reported having seen a large bird of prey flying over our pleasure-grounds early this morning, with such detail as to leave no doubt in my mind of its being a Rough-legged Buzzard.

23rd. I received from Mr. H. Field, of Kettering, a bad skin of a male Red-breasted Merganser (*cf.* Zool. April 21st, 1890), and, for identification, a skin of Knot: this latter bird, as Mr. Field informs me, was picked up on Dec. 5th ult., near a brook on the north side of Kettering, by a man who had picked up another (?), in the same spot, eleven years ago.

24th. Song Thrushes in full song. S.W. wind with much rain.

26th. One of our gamekeepers reports that many of our Partridges are paired.

27th. I received as a present from Mr. Robert Whitworth, of Houghton Mills, Northampton, a stuffed specimen of Arctic Skua, *Lestris crepidatus*, with the information that he shot the bird in that neighbourhood on Oct. 14th ult. My son reported about a hundred Mallard, eighteen or twenty Wild Geese, a small bunch of Teal, and a small trip of Golden Plovers on the flooded meadows below Thrapston. The Rev. E. Moore reported thirty or forty Wild Geese as having been seen at Biggin, near Oundle.

Jan. 30th. Our shooting party saw a solitary Curlew on ploughed land near Achurch. Many Curlews pass up and down our valley in autumn and spring, but I do not remember to have previously heard of one in this neighbourhood at this time of year.

FEBRUARY.

5th. The decoyman reports a pair of Pintails on the decoy-pool. An adult male Common Pochard shot by my son, and a male Tufted Pochard by a gamekeeper on the river.

6th. A very beautiful adult male Sparrowhawk managed to get through the wire-netting at top of our pheasant-pens; it was brought to me alive, apparently quite uninjured, and restored to freedom at my window.

10th. I received from Mr. Matthews, taxidermist, of Stamford, a female Hen Harrier, stuffed by him, and killed about the middle of November last by one of Lord Exeter's gamekeepers in Collyweston wood: this functionary subsequently informed me that the bird was eating a rabbit when he killed it, but that "its principal food was Partridges, and its flight was almost like the Common Owl."

11th. I this day received, as a present from Mr. Ralph Nevile, the only Northamptonshire specimen of Golden Eagle that I have ever heard of. This bird is, I should say, in the plumage of its second year; it was killed in October, 1849, by one John Barratt, in the "High Woods" between Burghley House and Walcot, the seat of Mr. R. Nevile, and was stuffed and mounted by Mr. Evans, taxidermist, of Bourne, Lincolnshire.

12th. A male Pochard appeared on our park pond.

13th. A very fine Canada Gander, one of several of this species that have been haunting our meadows for some time, was killed by a farmer on an estate adjoining Lilford, and sent, at my request, to me for inspection. These birds are wanderers from Blatherwycke, the seat of Mr. O'Brien (*cf.* Zool. 1891, pp. 45, 46).

16th. I received a pair of Pintails, in the flesh, from the Peakirk decoy. A pair of Stock Doves were finishing a nest in an elm tree near the boat-house, Lilford. I received from Peterborough a stuffed Oystercatcher, killed on 2nd inst. at Stanground.

18th. I heard from Mr. W. Bazeley that he had just received, for preservation, a female Goosander, shot at Ravensthorpe reservoir. This specimen was most kindly presented to me in April by Mr. J. Eunson.

23rd. Sixteen degrees of frost registered at daylight. The decoyman brought in four Wigeon, and reports having left two of this species, about forty Mallards, a male Gadwall, and three Pochards on the pool.

24th. Twenty-three Golden Plovers seen on Wadenhoe this morning by D. M.

27th. I heard from Mr. H. Field that a Sea Eagle had been shot at Oakley on the evening of 24th inst., and sent to him the

next day for preservation. I sent a competent person over to Kettering at once to make enquiry about this bird, and obtained the following details:—It was shot by a man in the employ of Mr. Northen, tenant of Oakley Lodge, who had noticed it about all the afternoon of 24th inst. “Through the dense fog, it did not go away far; so he sent one of his men across the field gently, as the bird could see him, and he crept up close to it under the hedge, so shot it through the neck, and broke one wing.” This bird, as Mr. Field informed me, was a female, and measured 3 ft. 4 in. in total length, 8 ft. in expanse of wings, and weighed about 8 lbs. It was eventually obtained for preservation by Sir R. de Capel Brooke, the owner of the farm upon which it was “done to death.”

MARCH.

4th. Female Pintail on our decoy.

11th. Two Stock Doves' nests in the park with eggs.

16th. I heard from Mr. J. Evans, of Bourne, that he had received, for preservation, on June 13th ult., in the flesh, a male Honey Buzzard, killed by one of the gamekeepers at Milton, near Peterborough. This specimen is now in the Peterborough Museum.

23rd. Under this date, Mr. H. O'Brien wrote from Blatherwycke, “I saw four Great Crested Grebes on our pond to-day, and think that this must be their first appearance since the great frost.”

26th. Having been informed by Mr. W. Tomalin of the occurrence of a Honey Buzzard near Syresham in 1874, I wrote for particulars of the occurrence to the woodman named to me by Mr. Tomalin, and to-day received the following reply:—“Salcey Forest, March 25. I beg to say, in answer to your letter, that the Honey Buzzard was pulled out by me in the Crown Woods, near Silverstone, in this county, in September, 1861. On seeing the wasps unusually busy one morning about 8 o'clock, I went near the nest to ascertain the cause. The whole of the combs were scratched out, and there was a hole nearly the size of a beehive. On seeing the tail of a bird, I put my arm in, and drew out what proved to be a very fine specimen of the Honey Buzzard. I sent the bird to a man named Dickins for preservation, but having been badly stuffed, after about ten years it crumbled to

pieces. To prove the date, I enclose the receipt for stuffing.—
THOMAS GULLIVER, Crown Woodman.”

27th. A pair of Goosanders observed upon Ravensthorpe reservoir, *vide* Mr. J. Eunson.

31st. First batch of Peewit's eggs of the season brought in.

APRIL.

4th. Large flocks of Fieldfares and some Redwings passing to the northward.

5th. I heard from Mr. W. Tomalin that a male Red-throated Diver was killed at Woodford Mill on 24th ult.

6th. Under this date, Mr. W. Bazeley wrote to me, enclosing the following notes of occurrence of various birds in the county of Northampton, most, if not all, of which had come into his hands:—“Storm Petrel caught by a cat at Weston Favell, Dec. 3rd, 1889; Mr. Shipley.” I subsequently purchased this specimen from Mr. Bazeley, and found that it was a Fork-tailed Petrel, *Procellaria leucorrhœa*. “Manx Shearwater, Hackleton; L. Tysoe, Aug. 24th, 1884.” “Little Auk, picked up in a garden, Stow Nine-churches; S. Eales, Nov. 15th, 1884.” “Puffin (immature), Thornby; Mr. Fasen, Dec. 12th, 1883.” This bird, which was recorded in the local newspaper, and originally reported to me as a Little Auk, was sent to me for identification on Jan. 29th, 1884 (*cf.* Zool. 1884, p. 193). “Greenshank, Whilton; John Blencoe, Dec., 1885.” I purchased this specimen from Mr. Bazeley; it is, to the best of my knowledge, the only Northamptonshire specimen that has been preserved of this species, which is of very uncommon occurrence in our county.” “Puffin, immature, Snelson; no date.” “Large (?) Black-backed Gull, Brampton; Mr. Saunders, no date.” “Manx Shearwater, Heyford; S. Ales, picked up in a farrier's yard, Dec. 29th, 1883.” I quote the above extracts from Mr. Bazeley's notes *verbatim*, but cannot answer for correct identification, except in the instances above specified as having come into my hands.

9th. Eight Wigeon reported as still lingering on our decoy-pool.

10th. Large flock of Siskins haunting the alders about Lilford bridges. A female Tufted Pochard is frequenting our park-pond.

19th. R. C. informed me that one evening lately his attention was called by some village lads to what appeared to be a “cluster

of rats" in a tall bush in a lane-fence close to Pilton. He stirred up this "cluster," and found that it was composed of some fifty or more Long-tailed Tits. This is by no means the first occurrence of this kind that has come to my knowledge in our neighbourhood; but in my experience these closely-packed congregations have been generally met with in the depth of winter.

MAY.

8th. About a dozen Fieldfares seen at Tichmarsh.

18th. A Jack Snipe seen near Warmington Mill by Mr. J. Crisp.

JUNE.

19th. I received a letter from Capt. J. B. Maunsell Tibbits, in which he informed me that a pair of Ring Ouzels were haunting his garden at Rothwell Grange. I may mention that, although I have no positive record of the nesting of this species in our county in my lifetime, Morton, in his 'Natural History of Northamptonshire' (1712), states with reference to the Ring Ouzel, "With us it has bred in bushes on the sides of a pretty steep valley between Clipston and Marston, in Clipston Lordship." And I have strong presumptive evidence of its having bred in the county besides that afforded by the presence of a pair of these birds at Rothwell at this season.

25th. Four male Teal, in full plumage, dropped on to our aviary-pond, but only remained for a few hours.

26th. Four young Pied Woodpeckers were brought to me from a hole in a tall oak on the property of one of my neighbours. These birds fed well, and appeared to thrive for a few weeks, but one after another began to droop, and all four were set at liberty. I have good reason to believe that all recovered their health and strength.

JULY.

3rd. Mr. W. Tomalin informed me by letter that on this day, whilst fishing near Ringstead, he twice saw, and clearly identified, four Curlew Sandpipers.

10th. I received, for identification, two fresh unblown eggs of Great Crested Grebe, taken at Ravensthorpe Reservoir, from Mr. J. Eunson. These are the first Northamptonshire eggs of this species that I have handled, though I was previously well aware of the breeding of this Grebe in our county.

16th. First report of Snipe since April last.

26th. First report of Green Sandpipers; two seen near Thorpe Station.

AUGUST.

4th. One of our gamekeepers shot a very fine adult female Lesser Black-backed Gull from a lot of four flying over Lilford Wood.

5th. I received as a present from Mrs. Tryon, of Bulwick, a stuffed specimen of White-tailed Eagle, immature. I have never been able to obtain even an approximate date of the occurrence of this Eagle which was killed near Bulwick; but it was certainly stuffed, cased, and on view in a passage at Bulwick House in 1848.

10th. Two Peregrines "toying," and screaming high in air, over Lilford Lynch.

11th. An immature female Shoveller dropped in, and was caught, at the decoy.

15th. A Jack Snipe seen on Thorpe Bogs by one of our gamekeepers, on whose accuracy I can implicitly rely. The earliest previous record of the appearance of a "Jack" in our neighbourhood that I can find in my note-books is that of one killed by myself in shooting a Partridge on Sept. 7th, 1852; my Partridge fell dead on a railway embankment, and on going to pick it up I found this Jack Snipe stone-dead within a few inches of it.

16th. Two Teal dropped on to the decoy-pool. I only record this because it bears out my experience that the first autumnal appearance of the Peregrine in our neighbourhood is either heralded, or very soon succeeded, by that of Teal.

22nd. Two "cream-coloured" Wagtails in front of the house at Lilford.—R. C. A young Cornerake was caught yesterday at the decoy by a dog, uninjured, and put into the aviary. I mention this because I am glad to add that this bird has survived the severe winter, and is—at this time of writing (April 14th, 1892)—perfectly healthy, very tame, and, as I am assured, beginning to "crake."

24th. I received an immature stuffed specimen of Buffon's Skua, from Mr. J. Cox, of Overstone Rectory farm, with the information that it was picked up dead there on Oct. 12th, 1883.

29th. A Manx Shearwater was picked up alive at Harlestone

(W. Bazeley). The same informant tells me that he had also received a young male Cormorant, killed at Naseby on 27th inst.

SEPTEMBER.

10th. First appearance of Grey Wagtail reported. This is an unusually late date for this bird here.

18th. I observed two Common Terns about the river near the house: one of these birds was vigorously chased and twice turned down wind by a Rook, but shook off that pursuer, and passed our boat for the third time, with only a few Swallows and Martins in close attendance; again it turned down wind, but returned after a few minutes with three Wood Pigeons following, and apparently much interested in its travels.

21st. I did not hear till to-day of the passage southwards of a flight of Wild Geese on 12th inst.

25th. First Grey Crow and Whimbrels of season heard by me. My son assured me of having seen a few Fieldfares and some Golden Plovers on Tichmarsh.

29th. I heard to-day from Mr. P. Mitchell, of Cranford, that a Hoopoe was killed at Burton Latimer on 22nd inst.

OCTOBER.

5th. I noticed a Reed Warbler by the riverside. This is, in my experience, a very unusually late date for this species in this neighbourhood.

6th. I received, for identification, a young Nightjar, in the flesh, shot near Stoke Albany. This also is an unusually tardy lingerer in this county.

7th. I heard the first Redwing of the season, and the decoyman reported the first appearance of Wigeon on the decoy.

15th. Mr. W. Bazeley came to Lilford, and was good enough to present me with a Fork-tailed Petrel, in the flesh, with the information that it was picked up alive yesterday near Pitsford.

19th. The Rev. Horace Waller, under this date, wrote, "We had a lovely white House Martin flying about the village of Twywell last week.

20th. The decoyman brought me a Long-eared Owl alive and uninjured, and told me that he had found it hanging on one of his pipe-nets. This species, though by no means uncommon in certain parts of Northamptonshire, is a rare bird about Lilford.

I set this individual at liberty a few days after its capture, and have heard no more of it.

25th. Our meadows are all flooded, and I am told of "vast flocks" of Peewits frequenting them.

28th. A considerable flock of Brown-headed Gulls reported by my son and Lieut.-Col. Irby about Pilton and Thorpe. The decoyman told me of having about 500 "fowl"—Mallard, Pintails, Shovellers, Teal, Wigeon, and Pochard on the decoy-pool, but that his intended "drive" for them was spoiled by the firing of a gun at a short distance by a bird-scarer who, as my informant put it, "flushed the decoy."

29th. First report of Woodcock, about ten days later than the average date for first autumnal appearance of this bird with us. Six Goldeneyes seen on the river below Lilford by R. C.

NOVEMBER.

1st, 2nd and 3rd. Large numbers of Swallows and Martins flocking about the house at Lilford.

4th. I received an immature male of Great Crested Grebe from Lady Mary Thompson, with the information that it was killed yesterday at Milton.

5th. Three Goldeneyes dropped on to the park-pond.—R. C.

7th. Our butler told me that, observing his cat in pursuit of a bird in his garden at Thorpe, he joined her, and found that she was stealing up to a Fork-tailed Petrel, which on his approach managed to rise and fly over the garden-fence, and was no more seen.

19th. Several Swallows and eighteen House Martins about the house at Lilford. This is the last record in my journals for the year of the appearance of the former species, but some half-dozen of the latter lingered with us till the 21st inst., on which day one was picked up dead and a few others seen on wing.

24th. Thirty-seven Mallard, twenty-nine Teal, and one Wigeon taken at the decoy. The decoyman assures me that after the drive in which he took these "fowl," he left fifty Mallard, eight Pintails, four Shovellers, and twenty Teal on the pool.

28th. A female Pintail caught on the decoy.

29th. Two Pintails on the park-ponds at Lilford.

DECEMBER.

4th. My Goshawk "Barbara" suddenly turned from a rabbit that she had all but overtaken, and captured an adventurous Barn Owl that was taking its pleasure abroad in full daylight. The falconer, to my regret, could not "make in" quickly enough to save this ill-advised bird of night.

8th. A very large flock of travelling Wood Pigeons passed over the house here this morning in a southerly direction.

12th. Lady Lilford reported having seen a large bird pass the house this morning, hotly pursued by a number of Rooks. From the description and circumstance, I feel convinced that this was a Rough-legged Buzzard.

30th. Several members of a shooting party, on my neighbour Mr. Freeman's property at Clapton, assured me that "a Tern" flew over their heads to-day. A fierce westerly gale sprang up at sunset.

I append a record of first appearances of vernal migrants in our county for 1891, as reported to me on good authority. In the instances in which there is no special locality noted the observations were made at Lilford:—March 17th, Curlew; 24th, Chiffchaff; 25th, Woodcock; 26th, Wheatear (Duston); 29th, Nightingale (Delapre). April 1st, Bank Martin; 10th, Redshank; 13th, Merlin; 14th, Swallow; 15th, Wryneck; 16th, Tree Pipit, Green Sandpiper, Jack Snipe; 17th, House Martin, Willow Wren; 18th, Redstart, Ray's Wagtail, Blackcap; 21st, Cuckoo; 26th, Whinchat; Whitethroat, Turtle Dove; 29th, Lesser White-throat, Sedge Warbler. May 1st, Common Sandpiper, Ring Ouzel (Rothwell); 2nd, Corncrake; 3rd, Spotted Flycatcher; 5th, Wood Warbler; 6th, Reed Warbler; 8th, Swift; 14th, Garden Warbler, Nightjar; 18th, Red-backed Shrike; 25th, Hobby.

ON THE HERPETOLOGY OF THE GRAND DUCHY
OF BADEN.

By G. NORMAN DOUGLASS.

(Continued from p. 19.)

III. Fam. PELOBATIDÆ.

P. fuscus, Laur.—A comparatively rare batrachian, of nocturnal and secluded habits. I have never had the fortune to come across it during its sojourn in the water, or to discover the large larvæ in any of the ponds annually visited.

The sole locality as yet cited for its occurrence in the Grand Duchy is Mannheim (Nüsslin).

The absence of this species in Switzerland may account for the fact that it has not been observed in the southern parts of the Duchy, but as it has been found at various points of the east, north, and west of Baden, sometimes not far from the frontier, it will probably turn up eventually in the northern or north-eastern districts.

IV. Fam. HYLIDÆ.

H. arborea, L.—This species is not rare along the Rhine, though more frequently heard than seen. Near Karlsruhe there is only a limited, always decreasing, number of localities convenient for hibernating and depositing the spawn, and since a favourite piece of marshy ground, at the N.W. extremity of the "Exercierplatz" has been drained, the numbers of this frog have suffered a perceptible decrease. In the course of four summers I have only come across some four to six specimens—a very poor average in comparison with most parts of Germany. Round the shores of Lake Constance it is commoner, and also, I believe, in the south-western portions of the Grand Duchy. It prefers the level country to the hills, and is not found at anything like the elevation at which it occurs in the Tyrol and Switzerland (3000–4000 ft.).

The action of the chromatophores is very rapid with this batrachian, and experiments have proved the remarkable susceptibility of the eye to colour, enabling it to assume a protective resemblance in brief time. Thus it becomes brown on the ground, mottled on trunks of trees, &c.

In a stone-quarry near Cette (S. France) I was struck by a *Hyla* whose upper surfaces, of a rich gold colour with small, darker speckles, were wonderfully adapted to the limestone block on which it was sitting. Curious to say, another one, on a rock of the same colour, was of the usual rich green tint. I presume the eyes of the latter were shut at the time, and the adjustment of the colour therefore impossible.

It is also sensitive to atmospheric changes, and more so to moisture and dryness than to actual heat or cold. An individual brought from the Rhine-woods one afternoon to the drier air of the capital changed the same evening to a dark green; next day the colour was grey with small light spots, and afterwards it became dark brown with yellow blotches. The skin had also become rough and leathery—a condition which might be taken to indicate complete prostration of the nervous system, and a temporary reversion to ancestral colours. During a rainy night it changed to its original smooth green appearance.

Such observations will have been made by everyone who has kept this species in confinement, but they lose some of their value when it is remembered that the colour is equally affected by desquamation, change or lack of food, light, mental depression and ill-health of every sort, and that, besides, different individuals vary in this respect. Hence it is generally impossible to decide to what influence the change of colour, in most instances, is due. To obtain anything more than a superficial knowledge of the action of these different agents would require a long series of experiments, pursued on a more systematic basis than has hitherto been attempted.

V. Fam. DISCOGLOSSIDÆ.

1. *Alytes obstetricans*, Laur.—This is most probably a French innigrant. It was first observed in the western districts of Germany (Lower and Middle Rhine, Westphalia, Eifel, Nassau, valleys of the Moselle, Saar, Nahe and Lahn), but is now being discovered in various Central and Northern parts of the country (Hartz Mountains, Brunswick, Hanover).

Its distribution in Baden is not determined as yet. Bonaparte notes its occurrence at Mannheim, Nüsslin at Freiburg. If it reached this point from the northern cantons of Switzerland, as is quite likely considering its abundance there, there is reason

to expect that it will be found in other parts of the Grand Duchy in course of time. For it is only natural that all rarer species should first be signalled from the neighbourhood of University or other large towns—such as Freiburg, Bonn, Berlin, Strassburg—on account of the larger number of collectors and students living there.

I have heard the flute-like notes of *Alytes* in the vineyards near Oberschaffhausen (Kaiserstuhl), but not near Karlsruhe. At the Laacher See, in the Eifel, I searched in vain for it under blocks of lava, &c., but the season (first week of April) may have been too early for this locality.

2. *Bombinator bombinus*, L. — Universally distributed in Baden and the Bavarian Palatinate, and common enough near Karlsruhe (Wildpark, Durlacher Wald, &c.), as well as in all the ditches—muddy by preference—on the level ground and hills. At Eggenstein it occurs in the same locality with *Bufo vulgaris*, *Rana arvalis*, *fusca*, and *esculenta*.

I mention this because I have twice had an opportunity of noticing that where the area is more restricted and there are several unconnected ponds, the last-named frog and *B. bombinus* keep apart, as though disliking each other's company. They certainly occur promiscuously where there is no choice; but judging also by other facts, this enmity may be due to the acrid secretion in the skin of one species being distasteful to the other.

This fluid, with *B. bombinus*, is developed chiefly on the lower surfaces, and connected with the bright warning colour which the animal takes care to display by turning over on its back. This curious habit seems to have been accidentally acquired, perhaps from hurrying and stumbling when pursued, and, pending its general adoption, that part of the body, to judge by the colour of the young, has been rendered more conspicuous. Conversely, the upper parts are tending to lose their darker markings; for, when it thinks itself unseen, it will sit motionless, only showing the back, the colour of which is highly protective.

Many of these attitudes, originally merely the result of fright, have been gradually improved upon, and pass imperceptibly into those of feigning death. Some batrachians, on being alarmed, suddenly draw in all their legs, presumably to present the appearance of an inanimate object; others heighten the effect by

assuming curious contortions, like many newts and the species in question, and can be observed to bend their spine inwards, covering their eyes with their feet.*

From this class of devices the transition to those directly calculated to inspire terror is again so gradual that it is often difficult (for us) to decide what impression some of them are intended to convey. Examples of this method are comparatively rare among the Amphibia. I will only refer to *Rana arvalis*, which, more than the other frogs, is fond of inflating itself with air, no doubt in the hope of imposing by its size. Judging by a large number of individuals, I gather that the females are more addicted to this habit.

It is doubtful whether *B. igneus*, Laur., will ever be found in Baden. "It is certainly absent in the whole river-system of the Rhine above Bonn, and its existence on the lower Rhine is still very doubtful, whereas *B. bombinus*, this "typical mountain form, appears solely as perpetual resident of the plain in the upper valley of the Rhine (*i. e.* Baden), and seems here to take the place of *B. igneus*" (Wolterstorff, 1890).

Order II. URODELA.—Fam. TRITONIDÆ.

1. *T. cristatus*, Laur. (*cuclocephalus*, Fatio).—"Generally distributed, but not common," is said of this newt in most local faunas of Germany. The same applies to Baden. I have been informed of its occurrence in most parts of the country, except the higher ground of the Black Forest, but never in great numbers. At Karlsruhe a pair or two may usually be seen in a pond near the entrance of the Wildpark, where I have obtained pretty specimens of the *carnifex* stage: I have caught it in other ponds there, in the Durlacher Wald and various places. In the Palatinate it is considered "not very abundant."

The conditions of the country seem suitable to *cristatus*, and it attains full size (16 cm.) and bright colours. I have observed a

* "Comme pour ne point voir le danger," says Fatio. Or perhaps to conceal their brilliancy? It would be impossible to overrate the importance of such an item, considering the enemies with which many protective species have to deal. The Woodcock, for instance, is often betrayed solely by its eyes. Darwin's Patagonian lizard, "when frightened, flattened its body, closed its eyes, and then from its mottled tints was hardly distinguishable from the surrounding sand." But this movement may be purely instinctive.

slight tendency towards greenish tints in the spring costume of the male, but otherwise the coloration has always been normal. The crest varies individually in height, and by far the finest I have seen in this respect were caught in the so-called "Badloch," on the Kaiserstuhl.*

These crests are sometimes jagged and torn, perhaps from passing through the branches of brambles, &c. (such as often obstruct ponds), where they must be rather a hindrance.

But I am told they are useful as a protection against pike and other fish, which dislike the look of the serrated edge. A somewhat similar instance is that of the male Minnow enjoying a temporary immunity, as I am assured, from the attacks of larger fish, which perhaps have unpleasant recollections of the Stickleback, and are suspicious, at this season, of the family (?) likeness. I have not settled either of these points to my own satisfaction, but analogous examples show that many ornamental characters would not be so highly developed unless serving, at the same time, for practical purposes.

This applies to the ocelli of certain butterflies ('Tropical Nature,' 1st ed. p. 202), to the horns of stags, rattle of the Rattlesnake, and other structures; as well as to many of the secreting glands in various classes of animals. The voice, too, is generally of use in more ways than one, though, as we descend the scale, its functions and expressions naturally become less complex. It is absent, as a rule, among reptiles. Still there are exceptions, and J. v. Fischer, writing of that of the Gecko, distinguishes between the (original?) call-note heard during the breeding season and the other tones employed under the influence of fright, pain, or anger. The South European *Tropidosaura* is likewise gifted with a powerful voice, the possession of which would seem hardly advantageous to an animal of its habits, did we not know, on the authority of the same writer, that its arch-enemy, *Coronella girondica*, "lets it drop on the first scream."

* I cannot sufficiently recommend this locality to the notice of the many English naturalists who pass through Freiburg. For mineralogists it is probably unique, and without mentioning any of its special attractions, I may refer them to Prof. Knop, of Karlsruhe, who has visited this district annually for the past twenty-six years, and is most obliging in giving information of all sorts. Owing to its peculiar soil and situation, the plant and insect life are also highly interesting.

No wonder that, until observations such as this are forthcoming, the utility of certain characters is frequently called into question.

2. *T. palmatus*, Schneider.—Doubtless more widely diffused than is at present known. The localities already given for Baden are Heidelberg, Herrenwies, Mummelsee, and Freiburg; to which I can add Rippoldsau, and Allerheiligen, both in the Northern Schwarzwald, and well known to tourists. At the latter place I obtained great numbers in a small rill near the Convent, together, in about equal proportions, with *T. alpestris*. I also captured *palmatus* in the Glottenthal near Freiburg, in the same pond with *T. tæniatus* and *cristatus*, but nowhere in the Rhine Valley, nor yet at Grünwettersbach on the hills near Karlsruhe, where it is said to be found.

Coloration and size of Baden specimens agree with those from other parts of the Continent. The length never exceeds 10 cm., generally ranging between 6—8 cm. The females (from the same localities) vary in ground-colour from dark brown to greyish green; in a single case the under surfaces were pure white, instead of yellow.

During the summer months this sex bears such a close resemblance, in its obscure tint and emaciated condition, to others of *T. tæniatus*, that it is well to remember that the absence of pigment on the throats affords, as Mr. Boulenger has pointed out, the easiest criterion of its identity.

Having occasion to keep large numbers of this species in confinement, I was able to corroborate what others have observed with respect to its voice. This consists in a short, 'abrupt tone, but whether it is produced under the water or on coming to the surface to breathe, I could not say, as the animals were purposely kept out of the light.

The distribution of this species in Germany has been dealt with in a special enquiry by Prof. Leydig, to which I may refer those who are interested in the subject ('*Triton helveticus und Rana agilis.*' Würzburg, 1888).

3. *T. tæniatus*, Schneider.—This newt is about as common as the next species; for though not occurring, like it, on the highest points of the Schwarzwald, it is more abundant near the Rhine. No doubt its numbers here are kept down, to some extent, by a variety of enemies, preying chiefly upon the larvæ.

On the Kaiserstuhl, it is found near the "Badloch," inhabiting the tepid water which issues from the small excavation there.

In the Palatinate it is as generally distributed as in Baden.

With respect to coloration, I have only noted one male, from Karlsruhe, as peculiar in possessing two perfectly symmetrical rows of spots on the lower surfaces, instead of the irregular black blotches. The five converging stripes on the head show an interesting tendency to unite, recede towards the parotides and form an almost vertical pattern. This manner of development has many analogies in the animal kingdom, to which I hope to recur elsewhere at more length. The young, generally to be found under stones and such like, display a great variety of fundamental tints, from light brick-red to the darkest brown.

The proportion of the sexes seems less equal than with *T. alpestris*; at least, one often sees several males of this newt courting one female, whereas *alpestris* is, as a rule, to be found in pairs.

4. *T. alpestris*, Laur.—It will have struck anyone who has examined the fauna of Karlsruhe during the last few years that this newt has become more common, while *tæniatus* has proportionately decreased.

It is interesting to observe this tendency towards mutual exclusion, but we are generally at a loss to conjecture in what the advantages may consist which decide the day; for to attribute the ultimate victory of one of the contending parties to "greater flexibility of constitution, &c.," is doubtless true of most cases, though it contains little more than a re-statement of the fact. The context waxes hottest between those whom a physical similarity—relationship, in most cases—involves in the only too natural warfare; whether they be genera and genera, species and species,* or the variety and individuals of one species respectively. Whatever may be the cause of the displacement

* To the large list of analogous observations among birds I may be permitted to add two more examples. Within recent years, *Phylloscopus trochilus*, at one time very abundant near Karlsruhe, has been completely replaced by *P. sibilatrix*, so that these two now occur in exactly inverse proportions. Similarly, *Parus cæruleus* is increasing rapidly, whereas *P. cristatus* becomes rarer every day. In explaining the last case, no doubt the more enterprising disposition of *cæruleus*—witness the social success of the Sparrow—must be taken into account.

here, it is evident that *alpestris* possesses some capabilities enabling it successfully to invade a region to which it is not entitled by name.

I have missed this newt in the immediate vicinity of the Rhine, but, with this exception, have found it at every level up to the summit of the Feldberg. In the Alps it occurs at a still higher elevation, as I caught one in some water near the top of the Splügen Pass (Fatio gives "about 2500 mètres," Gredler 6500 (German) feet as the highest point of its occurrence). It is found throughout Germany, though sometimes not abundantly.

I have observed nothing remarkable about the colour of Baden specimens, except that the throat in some, perhaps younger, males, is as much spotted as with the females; but there are one or two other points I should like to notice.

In the first place, one may come across (in summer) specimens of *alpestris* whose eyes are devoured by the larvæ of some fly, probably *Lucilia sylvarum*, Meig. (Zool. Anzeiger, 1891, p. 455). It would be interesting to know whether the other newts are free from this parasite, and why, if this is due to their more aquatic life, some terrestrial batrachians, such as *Rana fusca*, appear equally exempt from its attacks.

Again, I once caught a female of this species, near Karlsruhe, with as distinct a crest as the male. This is a pretty frequent phenomenon among some mammalia and birds, but I only recollect one other instance with the *Urodela* (Leydig, 'Molche d. Württ. Fauna,' p. 39), though it occurs again commonly enough among lower animals.

Further I may call attention to the fact that most European species of this order, when entering upon their land life, assume either much brighter or much duller colours. I have certainly found *T. alpestris*, in the Alps, as brilliantly coloured in August as in spring, and it was this circumstance which suggested to me the possibility that the brighter tints of others at this late season may have been developed as warning colours, while the obscurer shades of the majority are protective. Without wishing to draw a general inference from a few cases, I may note, as bearing on the point, that the Marmorated Newt, on leaving the water, becomes "much more brilliantly coloured" than before, and that a similar acquisition of brighter tints takes place with the young Salamander (*cf.* also *Chioglossa lusitanica*) on definitely quitting

this element. The vivid hues of *Bufo variabilis* are not, as might be supposed, characteristic of the breeding season, but are only acquired later—"variabilis"—on the land; and it may be worth mentioning that the exceptionally acrid fluid in the skin of this species is, as with *S. maculosa*, confined, like the colour, to the upper surfaces. At all events, I venture to think that, in view of the increased interest now taken in questions of colour, this point is deserving of notice.

II. Fam. SALAMANDRA.

1. *S. maculosa*, Laur.—Plentiful throughout the whole length of the Grand Duchy, except in the woods of the Rhine Valley, where, to the best of my knowledge, it never occurs. I have obtained it in numbers from the wooded hills near Karlsruhe (Rittner-wald, Ettlingen), and throughout the Northern Black Forest. It seems here more abundant—especially in the Murg Valley—than in the southern and higher districts of the Feldberg. Often, as with *S. atra*, one finds large companies collected together at one point, and may then walk a long way before seeing another specimen. This comes, I fancy, from their all having crawled out of the same retreat prior to separating in different directions, and not from any gregarious or patriarchal disposition. I have not met with this species on the Kaiserstuhl, where several peasants assured me of its existence. This would be an interesting point to determine, as implying an emigration from the Schwarzwald across a stretch of level country; unless, indeed, it had been purposely liberated there. It is also universally cited for the Palatinate, but must be considerably rarer than in Baden, as I never saw it in any part of the country, in spite of the most propitious weather (five days of uninterrupted rain). It occurs throughout Germany in suitable localities, *i. e.*, damp and wooded hills, avoiding the cultivated plain and vineyards.

Baden specimens frequently attain the unusual length of 20 cm. The yellow of the spots varies in intensity between light lemon and dark orange. It has been observed that the exclusion of light renders these markings paler and less clearly defined, but there are individual variations irrespective of this cause. The fundamental tint is also of different shades from dark brown to bluish black. The markings seldom develop into the cross-

barred pattern, commoner with southern forms, but tend rather to become longitudinally confluent along the back. Very pretty specimens of this type may be found, though the continuity of the lines is broken on the tail.

I have never come across the Salamander after the beginning of October, and only once succeeded in unearthing three individuals, in close proximity to each other, during the winter. The coloration was as bright as in summer, and they were not long in regaining their habitual liveliness. My earliest date for their spring appearance is the first week of April.

It is a singular fact that the young of a certain size—from 5 to 10 cm.—appear to be much rarer than the adults, and I do not know that anyone has ventured an explanation of this. Is it that their habits are more nocturnal?

The larvæ are extremely abundant in all the shaded streams and springs of the hills. While they are being deposited, the females are sometimes carried away by the current, a misfortune which may entail disastrous consequences, unless they are drifted ashore again by a kindly wave. Similar accidents may take place during their summer rambles, if they happen to step into a half-empty cattle-trough or other hopeless situations. I have discovered *S. atra* in the same predicament, feebly struggling to keep its head above water.

Some of these larvæ are very light-coloured, in fact, almost white and transparent. Their egg, however, is always furnished with colouring matter. This paleness is probably the result of deficient nourishment, as has been experimentally shown by Fatio ('Faune des Vertèbres de la Suisse,' p. 579) in the instance of *Triton palmatus*. But these larvæ of *Salamandra* are no doubt constitutionally weaker, and must stand a poor chance of surviving and regaining their strength, in view of the severe struggle for existence among them.

Triton alpestris has been observed "more or less albinotic" in alpine lakes, but, from my experience, the light appearance of some of these newts *in the water* is due to the semi-detached and translucent epidermis.

Among reptiles and batrachians in general the tendency to this condition is comparatively rare: cases have been recorded with *Coronella lævis* (2), *Elaphis flavescens*, *Tropidonotus natrix* (2), *T. tessellatus*; *Alytes obstetricans*, *Bombinator bombinus*, *Hyla*

arborea, *Rana fusca*, *Salamandrina perspicillata*, *Triton cristatus* [?], and doubtless several more.*

White coloration is not, *eo ipso*, a pathological condition, unless accompanied by lack of pigment in the choroid lining and iris, which constitutes total albinism, and entails debility of various sorts. In every case its injurious effects are relative, dependent both on the climatic and social circumstances in which the affected individual is situated.

Like melanism, albinism, in so far as it denotes a diminution, however slight, local or universal, of the *normal* pigment, is due to a variety of causes. It is incidental to both sexes and all ages. Besides varying in degree, it differs also as to nature, being either temporary or permanent, congenital or acquired, sometimes hereditary, &c.,—distinctions whereby it has become entitled to various specific names. Being founded on a physiological diagnosis, these will apply equally to all species liable to the many forms of deficient pigment; but I venture to think that until some definition of the broader term "albinism" is adopted, most of the discussions on the subject will remain, so to speak, at cross purposes.

The majority of the cases above cited were *albinismus universalis*. A large proportion, nevertheless, belongs to that intermediate type, a few instances of which are on record with our own species—fair-complexioned negroes—under the name of "semi-albinism." I should retain this term in preference to "xanthous varieties," as several writers have employed the latter to designate a not *abnormal* condition (blonde type of European). Still, it is rather vague, and not as descriptive as the corresponding "phæism." *Albinismus partialis* (pied varieties), so frequent among warm-blooded animals, has not, to my knowledge, been observed with reptiles or batrachians.

I am unaware of the existence of any data showing the proportion of the sexes among albino animals, but have no hesitation in predicting that the females will be found in the

* In a paper by Dalla Torre on the 'Drachensage im Alpengebiet,' there is a note to the effect that one of these fabulous monsters, on being killed, "was found to have ten young ones in its body, one of which was quite white." Such a detail can hardly be ascribed to pure imagination, and supports the view that the origin of these myths must be sought, to a large extent, in the fauna of the country.

minority, seeing that this sex, in variability of every description, is less inclined to depart from the mean.*

2. *S. atra*, Laur. — I would not refer to this strictly alpine species, but for misleading accounts of its existence in the Schwarzwald and elsewhere, which anyone interested in the fauna of the country is sure to hear. These may be safely attributed to errors of identification with *Triton alpestris* in its terrestrial costume.

The nearest point of its occurrence on this side of the Rhine is the neighbourhood of Isny, in the extreme S.E. of Württemberg, and within the Bavarian alpine system (Leydig).

A number of specimens were liberated, in 1876 (*cf.* Zeitschrift für Wiss. Zoologie), near Wildbad and Freiburg, in the Black Forest, but nothing more has been heard of them.

NOTES AND QUERIES.

MAMMALIA.

Badgers near Scarborough.—On April 15th a pair of Badgers were captured alive at Flixton, a small village on the Yorkshire Wolds, some six miles from Scarborough. On digging down to the nest a mass of moss and dry grass sufficient to fill a wheelbarrow was found, in which the Badgers were curled up asleep. Both were secured uninjured; but the male, a fine animal weighing 26 lbs., was afterwards killed, and has since been stuffed. The female has been kept alive, in the hopes of securing a litter of young ones. Whilst digging down to the nest a very perfect skull of the Badger was unearthed, which had evidently lain there a considerable time.—**WILLIAM J. CLARKE** (44, Huntriss Row, Scarborough).

Polecats at Scarborough one hundred years ago.—A friend of mine, while going through the Archives of Scarborough, a short time ago,

* Such, at least, is the result of statistics, so far as they have been published with respect to man, and my own observations agree in giving a considerable preponderance to males. This can be well seen among the manufacturing population of Lancashire, where the phenomenon is not rare, especially among children. The mortality here during growth is doubtless increased by bad nutrition, unhealthy surroundings, and overcrowding, which, besides favouring anæmia and other diseases, are not calculated to alleviate the ordinary evils associated with albinism: defective sight, photophobia, nystagmus, &c.

came across the following records, which may prove of interest to some readers of 'The Zoologist.' They form part of the Churchwardens' account against the Corporation in the year 1775, and run as follows:—

			s.	d.
1775, June 8.	Paid Sampson Thompson for 7 Foulmarts' heads	- - - - -	2	4
Nov. 3.	Do. Rd. Wedgewood of Falsgrave for a Foulmart's head	- - - - -	0	4
„ 27.	Do. John Stublely for a Foulmart's head	- - - - -	0	4
„ 30.	Do. do. do.	- - - - -	0	4
Dec. 23.	Do. do. do.	- - - - -	0	4
1776, Jan. 2.	Do. do. do.	- - - - -	0	4
Feb. 21.	Do. John Harrison for a Foulmart's head	- - - - -	0	4
Mar. 1.	Do. John Stublely do.	- - - - -	0	4
„ 21.	Do. Isaac Brown for a Weasel's head	- - - - -	0	2
April 2.	Do. John Stublely for a Foulmart's head	- - - - -	0	4
July 18.	Do. Ch. West for a Foulmart's head	- - - - -	0	4
Sep. 18.	Do. Guy Allison do.	- - - - -	0	4
Dec. 21.	Do. John Stublely for two do.	- - - - -	0	8

Wm. Parkin, Churchwarden, charges Corporation as follows, in 1774-5, but gives no dates:—

Paid to John Megson for six Fowmats' heads	- - - - -	2	0
„ John Taylor for 2 do.	- - - - -	0	8
„ Thos. Masters for 3 do.	- - - - -	1	0
„ Guy Allatson for a Fowmat's head	- - - - -	0	4
„ John Swift for 3 do.	- - - - -	1	0
„ John Trot for 3 do.	- - - - -	1	0

The Polecat is now very scarce in the Scarborough district, if not entirely exterminated. The last one of which I have notes was killed in Ramcliffe Wood about 1882; but owing to the stench produced by the animal, its captor left it where it was killed, and on visiting the place afterwards the body was found to have disappeared. About the same time (unfortunately I have not the exact date) I had a good view of one for about ten minutes, in a thick fir wood at Seamer Carr, near Scarborough. It was running round a small clearing in the wood, and, from its actions, appeared to have a mate close at hand.—WILLIAM J. CLARKE.

Marten and Wild Cat.—On the 12th of last March I received, in the flesh, an old male Marten. It had been caught in Cumberland on March 5th; but, owing to some delay in transit, it had been dead seven days ere it reached here,—I suppose a little "high"; but having passed the skilful hands of Mr. J. Cullingford, taxidermist, it has turned out a very good specimen of that now rare animal. I also received the skin of

a female Wild Cat, caught in Scotland on March 4th. It measures $29\frac{1}{4}$ inches in length.—JAMES SUTTON (Durham).

Polecat in Northamptonshire.—As I gather from recent numbers of 'The Zoologist' that a certain interest attaches to "modern instances" of the occurrence of the Polecat in this country, I write to say that I was informed by Mr. Percy Mitchell, of Cranford Hall, near Kettering, that one was trapped there by his gamekeeper in the month of September, 1891. My falconer has just informed me that a Polecat (trapped on the property of my neighbour, Mr. Freeman, of Clapton, on Friday, April 1st) has been sent to him for preservation.—LILFORD (Lilford Hall, Oundle).

Earliest use of Foxhounds.—An earlier notice of Foxhounds than that noticed by Mr. H. A. Evans (p. 143) will be found in the 'Twelfth Report of the Historical Manuscripts Commission,' Appendix, part vii. It occurs among the MS. of Sir Daniel Fleming, Bart., of Rydal. The abstract furnished is the following:—"November 17th, 1674. Newsletter 11th. On Saturday or Sunday next his Royal Highness, and the Duke of Monmouth, and divers persons of quality go to Chichester, where they are to lodge in the Bishop's Palace, and expect all the gentry of the neighbourhood to repair with their dogs for seven or eight days' fox-hunting" (p. 114).—A. H. MACPHERSON (Carlisle).

CETACEA.

Rorqual in the Humber.—On April 14th a large Rorqual, *Balænoptera musculus*, was stranded on the Den, a prominent shoal just within the Spurn. It was there killed by the life-boat crew, and subsequently towed across to the sands at Cleethorpe, on the Lincolnshire side, for exhibition, where I saw and examined it on the 16th of that month. The dimensions were:—Total length over all, 76 ft.; girth behind pectorals, 32 ft. 4 in.; gape, 15 ft. 6 in.; across tail, 15 ft. 6 in.; length of pectoral fin, 7 ft. 6 in. The baleen-plates were 18 inches in depth near the angle of the mouth and tapering towards the front, and 9 inches in width, brownish in colour towards the back of the mouth, but in front almost pure white, clouded with violet. This and the comparatively small size of the pectorals, as well as some other external features, point to the conclusion that this was the so-called Common Rorqual, and not Sibbald's Rorqual (*B. Sibbaldii*, J. E. Gray)—the only other of the *Balænopteridæ* with which it could be confused. It was sold on the coast for £75, and the skeleton will be preserved.—JOHN CORDEAUX (Eaton Hall, Retford).

BIRDS.

Plumage of the Serin Finch.—There are one or two points in connection with the winter plumage of the male Serin, *Serinus hortulanus*, on which those who have seen more specimens than I have may perhaps be

able to enlighten me. I have four males in winter plumage. "No 1" is labelled "Near Milan, November, 1891": this specimen is very brown on the head, back, wings, and flanks; the bases of the feathers on the forehead do not show much yellow, but there is a good deal of this colour on the breast. "No. 2" is labelled "N. Italy, November, 1884": this bird has got a certain amount of brown on the back and flanks, but on the whole is much yellower than "No. 1"; the edges to the wing-coverts are greener, the breast and throat bright yellow, and the bases to the feathers on the forehead are of the same colour, although this is hidden almost entirely by grey tips. "No. 3," labelled "Nice, November, 1891," is very much like "No. 2," but is altogether greyer on the upper parts, and the back shows very little brown. "No. 4," from South Spain, dated 13th November, 1890, is not unlike a bird in spring dress; the yellow is, however, less brilliant, though there is just as much of it; the line over the eye and the forehead are not in the least obscured with grey; the colour of the upper tail-coverts is practically the same in all four specimens, nor is there any material difference in the wing-quills or tails. In addition to the above, Mr. O. V. Aplin kindly sent me for comparison three male birds from his collection. These comprised a bird in full spring dress; "No. 5," labelled "Florence Market, 15th December, 1891," which may be placed in the same class as "Nos. 2 and 3"; and "No. 6," from North Italy, October, 1884, which is very much in the same dress as "No. 1." Now, on examination of the few skins at my disposal, I originally thought that birds like "No. 5" might be young; for I had a recollection of having noticed specimens like "No. 4" in Italy last winter, presumably older birds, with clear yellow foreheads. On mentioning this in a letter to Mr. Aplin, he suggested that perhaps the grey tips to the feathers on the head would be worn off before spring, which seems not unlikely to be the case. But this could hardly have occurred in "No. 4," a specimen I have only recently acquired; for this bird is dated "November," and it seems impossible for the grey edges acquired after the autumnal moult to have been lost so soon. The text-books generally state that the male in winter is duller in colouring than in spring, and that the yellow—especially on the head—is obscured by grey edges to the feathers. Mr. Dresser, in his 'Birds of Europe,' says—"Differs from the specimen in summer dress merely in having the yellow on the head obscured by greyish brown tips to the feathers; the back is less marked with yellow; and the wing-feathers have rather broader buffy white margins tinged with yellow; but the rump is as bright yellow as in the spring, if not brighter." This description applies more or less to "Nos. 2, 3, and 5"; so that we may assume, allowing a good margin for individual variation, that there are adult birds in ordinary winter dress. In the books to which I have referred there is no description of the brown dress of "Nos. 1 and 6," but presumably birds wearing it are in

their first autumn. I showed "No. 1" to Prof. Giglioli at Florence, and he expressed this view; but still this specimen and "No. 6" both show plenty of yellow, and Mr. Saunders, in his 'Manual' (p. 170), states that "the young in their first autumn exhibit hardly any yellow tint." Various other points arise as to birds like "No. 4," which retain the clear yellow forehead. Is this latter an abnormal phase, dependent on age or some other condition? Or does "No. 4" represent a normal state of plumage? and, if so, when do the birds acquire it, and through what stages do they pass in attaining it?—A. HOLTE MACPHERSON (51, Gloucester Place, Hyde Park, W.).

Nesting of the Chiffchaff.—I was much interested in reading the note on this subject by Mr. Backhouse (p. 150), and perhaps a similar instance may be worth recording. In June, 1886, there was a nest of this species in the grounds of the College of Agriculture, Downton, Salisbury, built in a yew tree near the extremity of a branch, and more than six feet from the ground. The domed nest was composed of dried grass, dead leaves, and moss, with a lining of feathers, and contained young birds. I frequently heard the note of the old bird, and when I was examining the nest the owner of it came very close to me.—CHARLES F. ARCHIBALD (Rusland Hall, Ulverston).

Woodcocks breeding in Worcestershire.—Hearing of Woodcocks breeding in one part of this county I paid the keepers a visit, one of whom had found a nest about April 16th. We went in search of it, and found that it contained four eggs. The old bird was sitting very close, and allowed us to stand watching her within a few feet, her wings trailing, tail erect, head set back with beak pointing downwards—an object not easily distinguished from the dead leaves and stumps around. The eggs were in course of hatching, and were laid—as in most cases—on the sunny side of the wood. Being referred to another man who had found a nest, we went to see that also. The bird had hatched off a few days previously, and the shells were lying around the spot. At night the number of Woodcocks in this locality might be estimated, as they fly overhead "roding" constantly. From one spot I counted seven, and this I believe is not unusual. The keepers assert that they are scarcer this year than last.—J. STEELE ELLIOTT (Park Road, Sutton Coldfield).

The Motions of Divers on Land.—It is generally stated and believed that the Divers are unable to walk on land. This is not quite correct. A few weeks ago I watched a Red-throated Diver, which was swimming in a tidal pool, walk deliberately out of the water, evidently with the intention of crossing a narrow spit of sand to the main channel of the estuary. It walked perfectly upright on its feet, in the same position as a Cormorant; but after progressing three or four yards it caught sight of me, and imme-

diately dropped down to the usual position, and shuffled back into the water. These Divers almost always rise and fly if approached by a boat, but take very little notice of a man walking on shore.—G. H. CATON HAIGH (Aber-Iâ, Penrhyndeudraeth, Merionethshire, North Wales).

Unusual Nesting-place for a Magpie.—Referring to the notes under this heading (Zool. 1891, pp. 309, 351, 353, 430), I would point out that Magpies not infrequently choose sites near the ground for their nests, notwithstanding that tall timber may be abundant all round. I know a spot, within thirty miles of London, where I have seen two nests at not more than six feet from the ground; both were in hedges on the borders of woods containing oak trees, with Magpies' nests in them. But in North Devon I found a nest the bottom of which was not more than eighteen inches from the ground, trees being abundant. I should like to hear any suggestions as to the reasons for this.—J. YOUNG (64, Hereford Road, Bayswater).

A White American Red-breasted Thrush.—In the Province of Quebec, Canada, in the spring of 1887, I saw a most interesting sight, viz. a white example of *Turdus migratorius*. It was in company with others of its own species in the neighbourhood of New Rockland and Kingsbury, Richmond county. Being at the time without a settled home, and having no collection of birds, this rare visitor was allowed to enjoy its freedom with the rest of its companions. But fortunately I had the opportunity of observing its actions for several days, and on two occasions, by making my way as noiselessly as possible through some trees behind a fence, and peering through the branches, I was able to scrutinize it at close quarters. Its feathers, with the exception of a few dark specks on the nape, were as white as the driven snow. The bill was of a dull cream-colour, and the legs and feet were of fainter hues than the usual colour of those of the family. The bird was somewhat wilder than the species usually is, more reserved with its vocal powers, and surveyed its surroundings with greater curiosity, as if it had just arrived from a cheerless region.—JOHN RIDGE (Kingsbury, Que., Canada).

Varieties of the Wild Duck.—I have two varieties of the Mallard, *Anas boscas*, both females, shot in Walney Fen, Cambs., last winter. In one of them the normal colouring is superseded by a pale buff or fawn-colour. The bill has more yellow than the type; head and upper part of neck pale buff, crown varied with brown, a triangular patch of white at the base of lower mandible; the lower part of neck has a broad collar of white; upper part of back and scapulars buff, most of the feathers, particularly the scapulars, prettily marked down the centre with blackish brown and tipped with white; the lower part of back white, varied with blackish, getting darker towards the tail, where the upper tail-coverts are almost entirely

black-brown; tail-feathers buff, with dark brown centres; small wing-coverts white, except a few in the middle and towards the greater-coverts, which are tipped with blackish brown; innermost greater-coverts purplish brown, margined with white; secondaries nearly white on the inner webs; outer webs purplish brown (forming the speculum): inner secondaries rich brown, tipped with white, the innermost one all white; primaries all white; breast above and sides clear pale buff; belly pale lemon-yellow; under tail-coverts buff; legs and feet as in the type. The other specimen has the crown of head and cheeks normal in colour; all the rest of the head and neck and base of bill white; upper part of back white; the rest of the back and scapulars normal; tail slightly pale, varied with white; point of wing normal; the rest of greater and lesser wing-coverts white, except a few of the innermost ones; secondaries white, except the two innermost, which are purple as in the type; inner secondaries normal; primaries all white; *re* secondaries, this only applies to one wing, the other has the first half purple and the rest white—reversing the order; chin and throat white; lower part of neck and breast yellowish white, with a patch of normal colour on each side near the point of wing; belly white, with a patch of normal colour each side above the legs; thighs brown; legs and feet as the type.—WM. FARREN (9, Union Road, Cambridge).

Nesting of the Black Scoter, *Oidemia nigra*, in Sussex.—Pardon my delay in reply to your queries respecting the Black Scoter in Sussex (p. 151). I have been from home. Mr. Fowler has sent me the bird, and I have it now. There is no doubt as to its being the Black Scoter, *Oidemia nigra*. He says that he saw the brood the first or second week in August, 1891. He is well known to me, and, besides being a keen sportsman, is a very observant naturalist. These are all the particulars I can give you at present; but Mr. Fowler hopes to prove beyond all doubt the truth of his communication by discovering the eggs during the coming season.—JOSEPH ANDERSON, JUN. (Hon. Curator, Chichester Museum).

Ivory Gull in Co. Dublin.—It may be of interest to some of your readers to learn that on April 19th last, while driving from the Phoenix Park to O'Connell Bridge, in Dublin, we saw an Ivory Gull, *Larus eburneus*. This bird, which attracted our attention by its pure white plumage, was feeding, among the usual throng of Common and Black-headed Gulls, on the garbage of the Liffey—the tide being low—just above Grattan Bridge, and many times flew, hovering and swooping, so close to us that the dark base of its bill was very conspicuous. So far as we could judge, it appeared on comparison the same size as the Common Gull, *L. canus*.—E. G. WADDILOVE (21, Old Square, Lincoln's Inn); S. V. COOKE (Naas).

Pied Rooks.—Nearly every season I notice one or more Pied Rooks around here. One bird in particular might almost be mistaken for a

Magpie by a casual observer. Last spring, during the annual rook-shooting season, a couple of pied "branchers" were killed, and were mounted by the city taxidermist; and lately I have noticed a pied Daw.—JAMES SUTTON (Durham).

Bitterns in South-Western Hampshire.—During last winter an unusual number of Bitterns were killed in the valley of the Avon, between Fordingbridge and Christchurch. I know of some eight or nine occurrences, and I heard of two or three others about which some doubt existed, and I extremely regret to say that more than one of the specimens were killed just for the mere act of slaughter, and were never preserved. It does seem sad that this grand species should be so ruthlessly murdered, but I suppose the fact of a large bird rising out of the reeds, and offering such a ready mark to the gunner, is a temptation that few could resist, for with many, I fear, the idea of "sport" is degraded into a desire to kill; and I am told that in many instances the Bittern seems to lack the wariness of its relation, the Heron, and that when roused, it usually rises in a somewhat lazy fashion, and often settles again at no great distance, and the following incident will prove that it will remain undisturbed sometimes in the midst of danger:—About the beginning of February a portion of the river, which is strictly preserved for water-fowl, was being shot over, guns being placed on both banks of the stream, which was rather wide, with a reed-covered island in its midst. There had been some considerable firing, and all the Wild Duck, &c., had taken wing, but it was deemed expedient to examine the island for "cripples," &c., when—to the astonishment of those who made the search—a Bittern rose from the coarse herbage, and, of course, met its fate. There it had remained through the whole of the fusilade, and doubtless would have continued in its retreat if no one had landed on the island. During the past sixteen or seventeen years I have seen a good number of specimens, and noted that the plumage differed considerably in particular individuals—attributable, no doubt, to age or sex. Such was the case with those of the past winter; the plumage of one—which I conjectured was a female—was as if the markings had been washed out, whilst another had the markings bright and well defined. The line of migration with the Bittern, as with other birds, is regulated, I suppose, by the severity or otherwise of the season, for during the severe winter of 1890–91 I did not hear of a single specimen in this neighbourhood; yet a winter seldom passes but I hear of one or more specimens in this locality or in the forest—indeed the one figured in "Yarrell" is from a New Forest bird.—G. B. CORBIN (Ringwood, Hants).

Woodchat and Bittern in Sussex.—I have to record the capture in this county of that extremely rare bird the Woodchat Shrike, *Lanius auriculatus*. The bird was shot at Fairlight, near Hastings, during the

first week of May. Mr. Borrer, in his 'Birds of Sussex,' records but one example, and the species is not noticed by Mr. Knox in his 'Ornithological Rambles in Sussex.' I have seen the bird, which is in the hands of Mr. T. Sorrell, taxidermist, of Old Humphrey's Avenue, Hastings, and it is an adult male in full plumage. Mr. Sorrell has also had a Bittern through his hands, which was killed in the early part of February of this year, close to Hellingly Station, near Hailsham.—THOMAS PARKIN (Fairseat, High Wickham, Hastings).

Cirl Bunting in Dorsetshire.—Mr. Aplin, in his paper on the Cirl Bunting in Great Britain (p. 176), quotes Mr. Mansel-Pleydell's work on Dorset Birds, in which I am reported to have shot a Cirl Bunting at Poxwell. This was a misapprehension on Mr. Mansel-Pleydell's part. I have frequently *seen* the Cirl Bunting on the road between Bloxworth and Poole, by Lytchett Minster, and (less frequently) in this more immediate neighbourhood, the last occurrence being near Bere Regis, where I watched a pair close to me for some time on the 2nd of July, 1888. The male occasionally sang a portion of the ordinary song of the Yellow Bunting, but omitted the usual plaintive coda. I never *shot* a Cirl Bunting—nor indeed ever saw one—at Poxwell, though I do not doubt but that it occurs there and at other points along the coast. In the summer of 1854 the late Mr. Frederick Bond and I obtained several nests, containing a total of ten eggs, along the coast from Weymouth to Wyke and Chickerell; and I had specimens of the bird, shot near Poole, in my collection for many years.—O. P. CAMBRIDGE (Bloxworth, Dorset).

Birds in Queen Charlotte Island, British Columbia.—Though the readers of 'The Zoologist' are, I believe, chiefly interested in the fauna of Britain, a few notes I have made during my fifteen months' residence on the birds of this locality may not be unwelcome. My attention has been confined almost entirely to land birds, and even of these I do not pretend to present a complete list, as other duties have prevented my doing more than note the birds that have come in my way. This island, I may remark, being washed by the Japan current, enjoys a climate no severer than that of Yorkshire. We are 100 miles from the mainland of British Columbia, though hills in the outlying islands of both British Columbia and Alaska are distinctly visible in clear weather, and the widest stretch of water does not exceed thirty miles. A pine forest covers the island, which is for the most part flat, though some hills in the interior reach an altitude of 1500 feet. The Raven, *Corvus corax*,* is, strange to say, our commonest bird. As I write I can see seven perched on the wooden fence surrounding my garden. They act as the village scavengers, and are as bold as London

* I adopt the nomenclature of Dr. E. Coues' 'Key to N. Am. Birds,' 2nd edition, 1884.

Sparrows. In early summer they do much mischief in the gardens, unearthing young potatoes, as Rooks do in England. Occasionally they attempt young chickens, but the commotion their presence excites in the yard usually defeats their purpose. When at rest on housetops and elsewhere they carry on a continuous chatter, accompanied with grotesque, gesticulations. They are resident throughout the year. Their near relatives, the Fish Crows, *C. caurinus*, are equally abundant, but move more in flocks, and confine themselves chiefly to the sea-shore. They are about the size of Jackdaws. The Song Sparrow, *Melospiza fasciata*, is the commonest of our smaller birds. Its song is short, but really sweet, and constitutes almost the only bird-music we enjoy. The only other songster of importance is the Wren, *Anorthura troglodytes*, whose song is indistinguishable from that of its little English relative. A walk round my garden usually calls forth the harsh scream of the Blue Jay, *Cyanocitta stelleri*, an almost black variety found on this coast; while a Golden Woodpecker, *Colaptes auratus*, rises with startling whirr from the foot of some tree, and displays the rich lining of the wings as it hurries off to the neighbouring forest. Snowbirds, *Junco hiemalis*, may always be found in the surrounding bushes, and Titmice, *Parus rufescens*, and Goldcrests, *Regulus satrapa*, in the pine branches overhead. A peep over the garden fence often reveals a Woodpecker on the tall pine trunks close by. The Downy Woodpecker, *Picus pubescens*, is the commonest, but the Hairy and Yellow-bellied, *P. villosus* and *Sphyrapicus varius*, are by no means rare. A Creeper, *Certhia familiaris*, I have only once met with. At a little pond at the bottom of my garden I can usually, on winter mornings, flush a Wilson's Snipe, *Gallinago wilsoni*. Flocks of Crossbills, *Lovia curvirostra*, with a few *L. leucoptera*, frequent the forest during the winter months. Hawks are numerous, though I have not met with many species. The Goshawk, *Astur atricapillus*, is so common an offender in the poultry yard, that I have been compelled to institute a "keeper's tree" for his special benefit. The Bald Eagle, *Haliaëtus leucocephalus*, constantly passes overhead, but is too busily engaged in watching the movements of the Ospreys, *Pandion haliaëtus*, to stoop to poultry. As many as six or eight Ospreys may often be seen at one time hovering over a little arm of the sea close by; and the dastardly treatment these birds receive at the hands of the Bald Eagles, so graphically described by Wilson, may be witnessed almost daily during the summer. The Ospreys retire to the south in winter, and leave the Eagles to fish for themselves. In the little salt inlet just alluded to may also be seen the beautiful Blue Heron, *Ardea herodias*, wading in the shallow water; while the Belted Kingfisher, *Ceryle alcyon*, is compelled, by the absence of fresh-water streams, to seek a living in the same place. The earliest of our summer migrants are the "Robins," *Turdus migratorius*, which appear about the middle of March. They are usually accompanied

by a few Oregon "Robins," *T. navius*—easily distinguished by the dark crescent on their chestnut breasts. About the middle of April Humming-birds arrive, though an occasional one is seen earlier in the month. Two species are said to frequent this coast as far north as Alaska, but I have hitherto only met with the Red-backed species, *Selasphorus rufus*. These are very numerous, and literally swarm during the summer months round foxgloves in our garden. They leave us quite simultaneously about the end of July. May brings the Swallows—the Barn Swallow, *Hirundo horreorum*, and White-bellied Swallow, *H. bicolor*—both of which breed under the eaves of the houses here. None were seen this year later than the end of August. Other summer visitors are the Olive-backed Thrushes, *Turdus ustulatus*, which, though very numerous, arrive late and leave early; Townsend's Warbler, *Dendroica townsendi*; Summer Warbler, *D. æstiva*; and a Flycatcher, *Empidonax* sp., which I have not yet identified. The inlets along the coast swarm with ducks of many species, with which may be observed Cormorants, Divers, and occasionally Swans, Canada Geese, *Bernicla canadensis*, pass overhead in immense flocks during the spring and autumn migrations. The Black Oystercatcher, *Hamatopus niger*, and several species of Sandpiper frequent the beach.—J. H. KEEN (Massett, Queen Charlotte Island, British Columbia).

Reminiscences of the Kite in Bucks.—In the neighbourhood of the quaint old village of Quainton, in the Vale of Aylesbury, where I first saw daylight, there are many local names testifying to the former presence of the Kite, such as "Kite's Hill," "Kite's Wood," &c. When I was a boy our old gardener (Lloyd by name) used to delight me by telling stories of Kites picking up chickens from the farmyard, &c. He also used to relate how, when they found a nest of young birds, by a simple but cruel process, they caused the young birds to cry with pain, and that the old birds, supposing they were cold, would rob the drying-grounds of socks and small linen, of which the boys, of course, obtained possession. The old man, however, was not always veracious.—J. YOUNG (64, Hereford Road, W.)

[He may well have been so in this instance. The habit of carrying off small linen with which to line the nest was long ago noted, when Kites were more common in England. Shakespeare wrote, "when the Kite builds look to lesser linen" ('Winter's Tale,' iv. 2), and more modern observers have confirmed the truth of the remark. See the illustrations in support thereof given in 'The Ornithology of Shakespeare,' pp. 46, 47.—ED.]

REPTILES.

Variety of Common or Ringed Snake.—On the 16th of October last I met with a very distinct and pretty variety of *Natrix torquata* on Bloxworth Heath. It is of an ashy white colour, with a broad pale yellow-brown stripe down the middle of the upper side, from end to end, and

including the whole of the upper side of the head. The dark markings are normal, and, particularly on the under side, contrast strongly with the general pale hue of the snake. There is, however, no trace of the transverse yellow markings at the occiput, whence the species gets its trivial name— „ringed snake.” Its length is nearer three feet than two. Snakes are in great abundance here, but I have never before seen the above variety, nor am I aware that a similar one has ever been recorded from any locality.—
O. PICKARD-CAMBRIDGE (Bloxworth).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 21, 1892.—Prof. STEWART, President, in the chair.

Mr. Henry Groves was elected a Fellow.

An example of an Australian bird (*Gymnorhina*), which had lately been shot near Tor Abbey, Devonshire, after being observed all the winter, and which had doubtless escaped from confinement, was exhibited, on behalf of Mr. W. Else, Curator of the Torquay Museum.

On behalf of Mr. Charles Head, of Scarborough, two specimens of the Whiskered Bat, *Vespertilio mystacinus*, taken in that neighbourhood, were exhibited by Mr. J. E. Harting.

Mr. W. B. Hemsley read a paper entitled “Observations on a Botanical Collection made by Mr. A. E. Pratt in Western China, with descriptions of some new Chinese plants from various collections.” Mr. Pratt travelled, in 1889–90, in Western China, close on the borders of Eastern Tibet, and though chiefly in search of zoological specimens, he fortunately secured the services of a native who had been trained to dry plants by Dr. Henry, the result being that he was enabled to bring home a very interesting botanical collection. The plants were obtained chiefly at elevations of 9000 to 13,590 feet, in the neighbourhood of Tat-sien-lu, a frontier town situated in about 30° N. lat. and 102° 15' E. long., and although Mr. Hemsley reported that he had not finished working out the collection, he estimated that it contained about 500 species, of which perhaps 150 species were new to science. The paper was criticised by Mr. C. B. Clarke, who remarked that the mountain ranges of Western China seemed to abound in showy herbaceous plants, rivalling in this respect the richest districts of the Himalayan region, of which, in fact, it is a continuation.

Mr. H. M. Bernard then gave an abstract of a paper “On the relation of the Acaridæ to the Arachnida,” in which he argued that the former had

been developed from larval forms of the latter; though he found a difficulty in dealing with the segmentation, this being so profoundly modified and in some cases lost. The paper was criticised by Mr. A. D. Michael, Mr. Breeze, and Prof. G. B. Howes, all of whom, while testifying to the ingenuity of Mr. Bernard's reasoning, considered that there was hardly as yet sufficient evidence to justify the acceptance of his conclusions.

May 5.—Prof. STEWART, President, in the chair.

Messrs. Ernest Galpin and Henry Groves were admitted, and the following were elected:—Messrs. C. A. Barber, F. Enock, and Henry Power; and, as Foreign Members, Professors Goebel, Lütken, Farlow, and Karl Möbius.

On behalf of Mr. Holt, Prof. G. B. Howes exhibited and made remarks on a very interesting collection of the metamorphosing larvæ of Flat-fish.

Mr. Curtis showed a photograph of sections of the Silver and Douglas firs, illustrating the relative rate of growth in trees of the same age growing in the same soil, and under similar conditions in all respects, the diameter of the one (*A. Douglasii*) being double that of the other.

Mr. George Murray exhibited spirit specimens of *Ascothamnion intricatum*, an organism described as a siphonous Alga, but ascertained to be identical with an animal—namely, *Zoobotryon pellucidum*, Ehrenberg. He also exhibited two specimens of a palm, *Thrinax Morrisii*, Wright, peculiar to Anguilla in the Leeward Islands, and made some remarks as to the results of the recent cryptogamic collections made by Mr. W. R. Elliott for the West India Committee.

Mr. Holmes exhibited and made some observations on an abnormal development of the calyx in a primrose.

The President exhibited and explained a collection of Lepidoptera, containing several examples of mimicry between protected forms.

On behalf of Dr. J. Müller, Mr. Thiselton Dyer communicated a paper entitled "Lichenes Epiphylli Spruceani."

Mr. W. F. Kirby gave an abstract of a paper on the family *Saturnidæ*, with descriptions of new species in the British Museum.

In the absence of the author, Mr. W. Percy Sladen read a paper by the Rev. Hilderic Friend, entitled "Observations on British Earthworms."

The President announced that the Anniversary Meeting of the Society would be held on May 24th, at 3 p.m.

ZOOLOGICAL SOCIETY OF LONDON.

April 5.—W. T. BLANFORD, Esq., F.R.S., F.Z.S., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, 1892.

Mr. Sclater exhibited and made remarks on the heads of a pair of Swayne's Antelopes, *Bubalis swaynei*, obtained by Mr. J. W. Clarke and his party in Somali-land, and sent for exhibition by Messrs. R. Ward & Co.

Prof. F. Jeffrey Bell read a note regarding the real habitat of the Land-Planarian, *Bipalium kewense*, which, as it appeared, was indigenous to one of the South Pacific Islands.

A communication was read from Mr. Edgar A. Smith, on the Land-Shells of St. Helena, based on a large and complete collection of the terrestrial Mollusks of that island made by Capt. W. H. Turton, R.E., and deposited in the British Museum. Mr. Smith estimated the total number of indigenous species of this group in St. Helena to be twenty-seven, of which seven only are now living on the island—the remainder having been exterminated by the destruction of the primeval forests.

Mr. F. E. Beddard read some notes on the anatomy of the Indian Darter, *Plotus melanogaster*, as observed in a specimen of this species recently living in the Society's Gardens.

Mr. Seebohm exhibited a specimen of a Pheasant from the valley of Zarafshan, in Central Asia, which he referred to a new species distinguishable from *P. principalis* by its white collar, and proposed to call it *P. tarnovskii*, after its discoverer.

Mr. R. J. L. Guppy exhibited specimens of the animal, the teeth and jaws, and the shell and egg of *Bulimus oblongus*, and remarked briefly thereon.

Mr. G. R. Sowerby read descriptions of seven new species of Land-Shells from the U.S. of Colombia.

A communication was read from Mr. W. Schaus, containing descriptions of some new species of Lepidoptera Heterocera from Brazil, Mexico, and Peru.

May 3.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, 1892, and called attention to a Finely-marked Owl, *Pseudoscops grammicus*, from Jamaica, presented by the Jamaica Institute, being the first example that has reached the Society.

Mr. Sclater exhibited and made remarks on a fine specimen of the egg of *Æpyornis*, the extinct giant bird of Madagascar, obtained from Southern Madagascar, and brought to this country by Mr. Pickersgill, H.B.M. Vice-Consul at Antananarivo.

Mr. Oldfield Thomas read a paper on the probable identity of certain specimens formerly in the Lidth de Jeude Collection, and now in the British Museum, with those figured by Albert Seba in his 'Thesaurus' of 1734.

Mr. F. E. Beddard read some notes on various species of aquatic Oligochæτους Worms that he had lately had an opportunity of examining. Amongst these was a new form allied to *Acanthodrilus* from the saline waters of the Pilcomayo, discovered by Mr. Graham Kerr during the Pilcomayo Expedition.

Dr. Hans Gadow read a paper on the systematic position of *Notoryctes typhlops*, the newly-discovered marsupial of Central Australia, and came to the conclusion that this anomalous form should stand as a distinct family of Polyprotodont Marsupials allied to the *Dasyuridæ* and the *Peramelidæ*.

A communication was read from Capt. H. G. C. Swayne, R.E., containing field-notes on the Antelopes of Northern Somali-land.

Mr. W. Schaus read the second portion of his descriptions of new species of Lepidoptera Heterocera from Brazil, Mexico, and Peru.

Mr. W. L. Sclater read some notes on certain species of Frogs in the Indian Museum, Calcutta, and gave descriptions of several new species based upon some of these specimens.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 27th, 1892.—ROBERT McLACHLAN, F.R.S., Treasurer, in the chair.

Mr. William Edward Baily, of Lynwood House, Paul Churchtown, Penzance; and Mons. Edmond Fleutiaux, of 1, Rue Malus, Paris, were elected Fellows of the Society.

Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species:—*viz.*, one of *Papilio machaon*, bred by Mr. S. Baily, at Wicken, in 1886; one of *Argynnis lathonia*, taken at Dover in September, 1883; one of *A. euphrosyne*, taken at Dover in 1890; and one of *A. selene*, taken at St. Osyth, in 1885, by Mr. W. H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett also exhibited, for Mr. Sydney Webb, a number of varieties of *Arge galathea*, *Lasiommata megæra*, *Hipparchia tithonus*, and *Cænonympha pamphilus*, from the neighbourhood of Dover.

The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemmaria*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale.

The Rev. Canon Fowler made some remarks on the subject of protective resemblance; he said his attention had been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and that Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting

upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant said that a species of butterfly in South Africa, which when its wings were vertically closed resembled the reddish soil on which it settled, in the Transvaal rested with open wings on quartzite rock, which the upper surface of the wings protectively resembled. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Mr. H. Goss, Canon Fowler, and Mr. Frohawk continued the discussion.

Mr. Goss informed the meeting that, in pursuance of a resolution of the Council passed in March last, he and Mr. Elwes had represented the Society at the recent Government enquiry, as to the safety and suitability of the proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd and 23rd inst., and that they had given evidence at such enquiry, and addressed a large meeting of War Office officials, Verderers, and Commoners.—H. GOSS and W. W. FOWLER, *Hon. Secs.*

May 11, 1892.—FREDERICK DUCANE GODMAN, F.R.S., President, in the chair.

Dr. Edward A. Heath, M.D., F.L.S., of 114, Ebury St., Pimlico, S.W.; and Mr. Samuel Hoyle, of Audley House, Sale, Cheshire, were elected Fellows of the Society.

The President announced the death, on the 4th of May, of Dr. Carl August Dohrn, of Stettin, one of the ten Honorary Fellows of the Society. Mr. Stainton expressed regret at the death of Dr. Dohrn, whom he had known for a great number of years, and commented upon his work and personal qualities.

Dr. D. Sharp exhibited drawings of the eggs of a species of Hemiptera, in illustration of a paper read by him before the Society; and also a specimen of a mosquito, *Megarhina hæmorrhoidalis*, from the Amazon district, with the body, legs and palpi furnished with scales as in Micro-Lepidoptera.

The Rev. Canon Fowler, on behalf of Mrs. Venables, of Lincoln, exhibited cocoons of a species of *Bombyx* from Chota Nagpur, India; also the larvæ-cases of a species of Psychidæ, *Cholia crameri*, from Poona, India; and a curious case, apparently of another species of *Psychidæ*, from the island of Likoma, Lake Nyassa. Mr. McLachlan, Mr. Poulton, and Mr. Hampson made some remarks on the subject.

Mr. F. W. Frohawk, on behalf of the Hon. Walter Rothschild, exhibited a specimen of *Pseudacræa miraculosa* mimicking *Danaïs chrysippus*; also a specimen of the mimic of the latter,—*Diadema misippus*, and read notes on the subject.

Mr. C. G. Barrett exhibited, and commented on, a long series of specimens of *Melitæa aurinia* (*artemis*) from Hampshire, Pembrokeshire,

Cumberland, and other parts of the United Kingdom; also a long and varied series of *Coremia fluctuata*.

Mr. H. Goss exhibited, for Mr. W. Borrer, jun., of Hurstpierpoint, a photograph of a portion of a nest of *Vespa vulgaris* which had been built with the object of concealing the entrance thereto and protecting the whole nest from observation. He also read notes on the subject, which had been communicated to him by Mr. Borrer.

The Hon. Walter Rothschild communicated a paper entitled "Notes on a collection of Lepidoptera made by Mr. Wm. Doherty in Southern Celebes during August and September, 1891." He also sent for examination the types of the new species described therein.

Dr. Sharp read a paper entitled "On the eggs of an Hemipterous Insect of the family *Reduviidæ*."—H. Goss and W. W. FOWLER, *Hon. Secs.*

NOTICES OF NEW BOOKS.

Poultry for the Table and Market versus Fancy Fowls. With an Exposition of the Fallacies of Poultry Farming. By W. B. TEGETMEIER, F.Z.S. 8vo. London: Horace Cox. 1892.

As an authority on poultry and pigeons, Mr. Tegetmeier's name is so well known that anything from his pen on this subject is sure to be worth reading, and practical. The object of this his latest book is, by exposing certain fallacies and stating certain plain truths, to increase the quantity of eggs produced in this country, and to improve the quality of marketable poultry. Not that Mr. Tegetmeier is opposed to the keeping of purely ornamental poultry as such, or to the holding of poultry shows by those who are pleased with the cultivation of fancy breeds; but he evidently considers that poultry shows, as ordinarily conducted, do not sufficiently influence and encourage the production of marketable and useful poultry. Indeed he goes so far as to say on his first page, as the result of an experience of half a century, that no one breed of fowls has been taken in hand by the fancier that has not been seriously depreciated as a useful variety of poultry. At present the aim of the exhibitor is not to breed fowls for any useful purpose, but to produce them in accordance with the requirements of the fancier, in order to win prizes, so as to sell birds at enormous prices as winners, which are likely to

produce others in their turn. Hence the monstrosities which are exhibited. Cochins are one mass of useless feather; game hens stand a foot or more from the ground; Houdans, Crève-cœurs, and Polish are bred with tufts so large that they can scarcely see to feed; and so on with other varieties.

Mr. Tegetmeier compares fowls as they were with fowls as they are, and shows that for agricultural and economical purposes the modern fancy breeds are useless, as contrasted with the older varieties. He considers that Agricultural Societies are doing more harm than good by offering prizes for useless birds, and ignoring to a great extent the birds which would be of more benefit to the farmer and to the nation at large.

Songs of Universal Life. By Rev. MARCUS S. C. RICKARDS, M.A., F.L.S., Vicar of Twigworth, Gloucester. 8vo, pp. 144. London: J. Baker & Son. 1891.

READERS of 'The Zoologist' will remember the author of this little volume of poems as a successful shore-shooter in North Devon, who was lucky enough to secure such rarities as the Pectoral Sandpiper and the American Stint. It is because Bird-Life enters very largely into the "Universal Life" which forms the subject of his poems that we make his book the subject of a short notice, feeling persuaded that we are doing well in calling the attention of lovers of birds to the very graceful lines he has devoted to some of their favourites. We may especially commend the Ode to a Reed Warbler, and some others dedicated to a Bullfinch, and to a pair of Ring Ouzels. There is also a poem entitled "Nature's Cycle," which we think is a description of a Devonshire lane leading down to the coast which is not unknown to us. We quote the three first stanzas of the little poem inscribed to the Pair of Ring Ouzels:—

"A deep and solemn silence broods
Over the breezy solitudes
Whereon the mountaineer intrudes
To crown a summer climb:
The soaring lark, a dreamy bee,
A pipit twittering from the lea,
Beguiled the journey, but no glee
Disturbs the peak sublime.

Yet music haunts it, and ere long
 From some wild crag will float a song,
 Perchance the protest loud and strong
 Of one who brooks no guest;
 Perhaps a love-plaint true and clear
 Meant to attract the distant ear
 Of wandering mate called back to cheer,
 Or mind the busy nest.

Sweep the grey boulders, and you soon
 Shall see the form whence flows the tune,
 And mark a crescent like the moon,
 Beneath a sable throat,
 With golden lips that warble till
 The yearnings melt into a trill
 Of joy, as flitting round the hill
 The truant hears his note."

In several of the poems which have other themes we find the fancy of the author to be so taken with Bird-Life that he is constantly borrowing from it some of his illustrations. Thus, in one called "A Woman's Destiny," we meet with the stanza:—

"Vain show and Fashion cannot fill
 The yawning gulf at a man's core:
 And wasted is the woman's skill,
 Who, copying, would please him more:
 The reeve may deem herself too plain,
 The ruff approves her russet dress,
 To don his plumage were no gain,
 To ape his strut would draw him less."

And what Mr. Rickards has written concerning the robbing of a bird's nest contains some words which are, unfortunately, only too true:—

"I took them as a thing of course;
 Collectors never know remorse,
 And seldom feel regret."

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[No. 187.

SUPPLEMENTARY NOTES ON THE BIRDS OF OXFORDSHIRE.

BY O. V. APLIN

(Member of the British Ornithologists' Union).

THE following notes have come to hand from various sources, or have been jotted down by me, since my book on the birds of this county was published in 1889, and form a report on Oxfordshire Ornithology down to the end of the year 1890.

OSPREY.—Mr. W. Newton, Jun., informs me that a female bird of this species was shot at North Stoke, and is still preserved.

PEREGRINE FALCON.—Mr. Darbey tells me that a Peregrine was killed in Tythrop Park in the early part of January, 1890. On March 15th, 1890, I saw one on the wing in Blackamore Meadow, in this parish. From its size, length of wings and tail, it must have been a female. An eyess falcon was shot at Waterperry about Dec. 26th, 1890, and an adult falcon in Bagley Wood, Berks, shortly afterwards: both these were taken to Mr. Darbey.

HOBBY.—I observed one wheeling about over the Swere Valley, in this parish, on May 11th, 1889. After a short time it soared into the air to a great height over my head, in circles, and then flew in an easterly direction. It was moulting its primaries, my glasses showing a gap in each wing very plainly. An old bird was shot near the Cowley road terminus of the tramway at Oxford, at the end of August or early in September, 1889, and taken to Mr. Darbey, where I afterwards saw it. Mr. J. G. Cornish, writing in 'The Field' of May 10th, 1890, upon "The Haunts of

the Hobby," says:—"Hobbies used to be common in the neighbourhood of Oxford thirty years ago. An old man told me that he used constantly to see these birds hawking for mayflies when he was fishing in the upper river. One that he stuffed was shot as it was flying over Witney Street." Mr. F. W. Lambert, of Oxford, mentioned in the 'Oxford Times' of June 7th, 1890, that a few days previously he found the decomposed body of a Hobby on the edge of the Otmore country: he also writes me word that he had information of Hobbies breeding at Waterperry in 1890, and of a bird of the year which was shot there, and brought to the city for preservation.

KESTREL.—Mr. J. Baldwin Young informs me he found a nest in a hollow tree at Bletchington in the early summer of 1890.

MERLIN.—The Rev. Murray A. Mathew writes me word that this species was often brought to Osman, the then Oxford bird-stuffer, in his time. He has a fine male which struck at a birdcatcher's call-bird and was netted. Mr. Wyatt, the Banbury birdstuffer, saw a blue male on the wing near the Castle Gardens, Banbury, on March 3rd, 1888.

TAWNY OWL.—Mr. Bartlett, of Banbury, showed me three eggs of this bird, which were taken in the last week of February, 1890. The bird was caught on the nest.

BARN OWL.—"C. W. R.," writing in the 'Oxford Times,' 1890, mentions having climbed, on April 15th, to an old crow's nest in the fork of an oak wood, in the parish of Whichwood. A Barn Owl flew off the nest, which contained three young Owls and two addled eggs, also six dead field mice. One of the old ones came and sat on the tree close to the observer. The young appeared to be about fourteen days old.

LONG-EARED OWL.—Mr. W. Lambert informs me that two were shot in Horton Wood about Oct. 19th, 1888.

PALLAS'S SHRIKE.—One shot at Wardington in the last week of November, 1890, came into my possession in the next month (Zool. 1890, p. 28).

RED-BACKED SHRIKE.—Mr. F. C. Aplin saw one between Woodstock and Oxford on May 22nd, 1889. A pair were shot by the canal opposite Bodicote in the second week of July, 1890. Mr. F. W. Lambert saw a male near Horsepath as early as May 1st, 1890.

SPOTTED FLYCATCHER.—Mr. F. W. Lambert informs me that

one was seen by a friend of his flying about the tower of Wood Eaton church on Sept. 28th, 1889. This is unusually late.

PIED FLYCATCHER.—Mr. W. W. Fowler wrote me word that a pair were seen in the Parks at Oxford on April 30th, 1889; they went on at once.

DIPPER.—I saw at Broughton, on March 9th, 1890, a bird which I have not the least doubt was a Dipper. The stream, which used to work the now disused mill, is an attractive looking place for this species, the banks high and steep, and overhung with bushes, the under-banks shelving, and about the bed of the stream some large stones, roots, &c. As I crossed the bridge the bird rose from this stony part and sped down stream in true Dipper fashion. It settled on a bit of shelving bank further down, where I could just see it fidgeting about with the usual jerky motions. But still its head was turned from me, so that I could not see its white breast, and as I impatiently moved forward to get a clearer view, away it went, and the stream is there so overgrown with bushes that I lost sight of it, and could not find it again.

REDWING.—On March 9th, 1889, the day after a heavy gale, with snow and rain, Fieldfares were very numerous, and Redwings even more so, swarming in the meadows. The afternoon was mild and sunny, and a perfect babel of twittering came from the flocks of birds sitting on the tops of the tall trees in the hedge-rows of one long meadow in this parish—a very favourite haunt of both species. Mingled with the twittering were a few sweeter notes of the Redwings, and an occasional “qui qui qui” of the Fieldfares. One Redwing, sitting by itself, sang its song, “tui tui tui tri tri tri” (as rendered by Mr. Howard Saunders), very sweetly. Though possessing much less variety than the Song Thrush, the notes are if anything sweeter, and much wilder. On the 30th, when I observed a good-sized flock of Fieldfares, I could see no Redwings, and I have often remarked that the latter are not seen with us so late in the spring as the former, which often stay till after the middle of April and sometimes still later.

BLACKBIRD.—Especially abundant in the autumn of 1889. Mr. Foster Melliar counted thirteen cock Blackbirds on the lawn at North Aston Hall on Nov. 25th.

RING OUZEL.—I examined, in the birdstuffer’s shop at Chip-ping Norton, two males shot near there in the spring of 1890. One of them was much pied about the head (which is not at all

unusual with these birds), and had the feathers of the tibia also white.

REDBREAST.—On March 30th, 1890, I examined a nest with three eggs in the ivy on the wall of a house in Bloxham. The bird had been building a long time. Foundation of dead leaves, honeysuckle, bark, &c., which apparently kept slipping down and away from the wall; so that the nest was about ten inches wide at the base and six or seven inches thick. This great structure was very conspicuous, and was then partly kept up by some long stalks of growing ivy leaves inclosed in it. It sloped up to the top (the slope being about ten inches long), where a nest of moss, wool, and hair, lined with the latter, was formed. The leaves used were of various kinds, many of them beech.

NIGHTINGALE.—Abundant about Oxford and in mid-Oxon. Mr. F. W. Lambert, of Oxford, writes me word that in the course of a day's walk round Marston, Headington, Elsfeld, Wood Eaton, Beckley, and Noke, he has met with perhaps twenty birds. He once heard five singing at the same time in Marston Copse. The nest of the Nightingale is usually found with its full complement of eggs in Oxon in the third week in May. Mr. Lambert has given me the following list of nests found, confirming this:—31st May, 1885, five eggs; 15th May, 1886, five eggs; 16th May, 1886, four eggs; 23rd May, 1886, five eggs; 23rd May, 1887, five eggs; 19th May, 1889, five eggs; 3rd June, 1888, five young; 10th June, 1888, five eggs; 17th May, 1890, five eggs; 19th May, 1890, five eggs. One of the keepers at Combury Park told me in July, 1889, that they had four pairs there that spring. Charles Townsend, a gardener, of Bloxham, remarked to me about the strange disappearance of this species from the parish. They used to frequent most of the spinneys about the village, but he never heard one now. He had been within a few yards of the birds, and had taken their nests and eggs. A friend living here tells me that Nightingales frequented the village until about ten or fifteen years ago. They always sang in his plantation near the house, and even in a Portugal laurel within a few yards of the windows. One of the last nests found in this neighbourhood was found in 1886 by Mr. E. Colegrove in a spinney at Milcombe; another nest was found at Holywell, on the edge of Tadmarton Heath (in the fox-cover of which I heard a bird in 1880), a few years before that. The Nightingale is still common at Oxford

and in other parts of mid-Oxon. Several nests were found at Bletchington in 1890. Mr. Fowler always finds a few about Kingham. Mr. Reeve, of Trinity College, kindly submitted for my inspection a local Nightingale's egg, one of five found on May 26th, 1890, of the variety of a bluish green ground-colour, mottled over with reddish brown. This variety resembles the eggs of the Blue-throated Warbler, and shows the relationship between the species. The arrival of this bird at Oxford on April 20th, 1890, was noted by three observers in the 'Oxford Times.' One of them (Mr. P. Taplin) wrote, on May 10th, that four or five could then be heard in full song on the northern outskirts of the city.

STONECHAT.—Mr. F. W. Lambert informs me that the Stonechat is found in some numbers on Open Brasenose, a furzy common between Cowley and Horsepath. He once found a nest containing five eggs in the bank of a dry ditch in a lane leading on to the Woodstock road near Begbroke. A male shot near the Banbury Cemetery on Feb. 22nd, 1890, was probably returning to its summer quarters.

WHEATEAR.—I received from Mr. Fowler a male Wheatear, shot at Oxford on March 26th, 1889—a rather early date for Oxon. It measured 6·3 in total length, and had almost entirely lost the brown edges to the feathers. On May 10th, 1890, I observed a beautiful large bright male in a meadow near Great Barford. It sang, not only from the top of a tall hedge, but also when sitting on the larger branches of a still leafless ash tree. This, no doubt, was an example of the large race which passes England on migration to its northern breeding grounds late in the spring. Two (ordinary) birds appeared on the return passage on a ploughing in this parish on Aug. 23rd, 1890.

REED WARBLER.—A nest of this species, now in the University Museum, was taken from a bush of *Althrea frutex*, six feet from the ground, in the Botanic Garden in 1866. In this nest a young Cuckoo was hatched. On May 31st, 1890, Mr. Fowler showed me a nest of this species at "Parson's Pleasure," Oxford, placed in a privet-bush at least six or seven feet from the ground, formed of long grasses, hair, &c., and containing four eggs. The bird sang nervously when close to us. The same day I heard two Reed Warblers singing in a thick belt of willows (no reeds) at Osney lock-weir, and another in the willows a little lower down stream.

SEDGE WARBLER.—Mr. F. W. Lambert informs me that two were seen, and one shot, near Wood Eaton on Oct. 23rd, 1889.

GRASSHOPPER WARBLER.—Mr. Lambert tells me that in the spring of 1889 he saw about a dozen one morning on Open Brasenose, where they breed. He has found a nest of young there, and has also noticed the species near Marston Copse, near Elsfield, and on the road between Stow Wood and Islip. A nest, taken in Stow Wood some years ago, is in the University Museum. The Grasshopper Warbler frequents Milcombe Gorse, near Bloxham, annually. A nest with eggs was found there a year or two ago, in the thick dead grass under a gorse-bush. I heard the birds in 1890. This gorse is near, and must have once joined, Tadmarton Heath. On July 19th, 1890, I heard one of these birds "reeling" in some wheat fields in the flat, rather treeless bit of country south-east of Bloxham towards Barford. I heard it in the same locality in 1887 and 1889. Mr. Lambert found a nest in a mass of dry grass matted with brambles on Shotover Hill (from which the bird was disturbed), on June 3rd, 1890. It contained three newly-hatched young, an addled egg, and the egg of a Cuckoo. A friend of his found another nest, containing two eggs, in a bed of nettles in the lane adjoining Marston Copse, near Old Headington, on May 17th, in the same year.

BLACKCAP.—On Dec. 20th, 1890, there was six inches of snow on the ground, and the cold had been intense for some days—very hard frost on the previous night; so that, on looking out of the window of a friend's house in Bloxham, I was surprised to see a female Blackcap feeding on the berries of a Cotoneaster in the low shrubs close to the window, although I knew the Blackcap was a fairly hardy bird. In view of its tameness, and almost certain fate at the hands (or claws) of the numerous cats on the premises, or from the gun of my friend's man—who was waging a Sparrow war, and would in all probability take a little brown bird like this for his lawful prey—the bird was shot and proved to be very fat. It looked well and happy, but had an enlargement of one or two toes. I can hardly believe it possible that this bird would have lived through the long bitter frost which continued for weeks and killed so many resident and winter birds. A good many Blackcaps attempted to winter in other parts of the country.

WOOD WARBLER.—Mr. Lambert saw one of these local birds at "Parson's Pleasure," on May 2nd, 1889; it was singing; he also observed three at Holton stone pits, near Wheatley, in the same year. I found two males in song and one hen calling in a small oak wood near Great Tew on May 18th, 1890. Mr. Lambert heard one singing in a field adjoining Christ Church Meadow on May 1st, 1890.

CHIFFCHAFF.—Mr. Lambert saw "a few" Chiffchaffs near Beckley on Oct. 12th, 1890: warm weather. The Chiffchaff occasionally stays well into October: in 1881 I frequently heard it in that month, and in December, 1887, I examined a stuffed specimen which had been shot near Banbury on Oct. 30th.

GOLDEN-CRESTED WREN.—Rather numerous in the late autumn of 1889. I noticed some at Bloxham, Wickham, and Broughton on Nov. 1st, 8th, and 10th, and Mr. Wyatt received several for preservation about the end of that month and the beginning of December.

NUTHATCH.—Mr. Lambert informs me that in 1889 a pair began a nest in a hole in a wall, four or five feet from the ground, in the much-frequented road leading past Wadham College. The old elms here, and the trees in the gardens of St. John's, Trinity, and Wadham Colleges support many Nuthatches. A pair nested in the spring of 1888 and 1889 in a hole in a wall, just under the thatch coping, in a garden at Bloxham. There is a row of filbert-bushes in front of this wall, and the owner tells me they have had no nuts since the Nuthatches took up their abode there, as the birds took them before they were ripe.

WHITE WAGTAIL.—A case of the interbreeding of this species with the Pied Wagtail is recorded in 'The Zoologist' for 1890, p. 376.

GREY WAGTAIL.—A full account of this bird breeding in Oxon will be found in the paper above referred to (Zool. 1890, p. 371). On April 27th of that year, Mr. Lambert saw three or four birds at Hampton Gay, in a spot admirably suited for a breeding-place—an old, untenanted mill, with rapid water among stones below the sluice-gate.

MEADOW PIPIT.—I observed a pair in the rocky railway cutting at Bloxham on May 6th, 1890. This is a very uncommon bird here in the breeding season.

SKY LARK.—On July 22nd, 1890, I saw, on a piece of grazed

clover in this parish, a flock of fifty or sixty Sky Larks. I thought they were merely collected on account of the abundance of some particular food there; but on rising they all went off together, and pitched in the middle of a big field of swedes, from which they rose once more altogether. This, in my experience, is a most unusual occurrence in July. At the beginning of the frost we had vast numbers of Sky Larks. I saw an exceptionally large flock on a barley-stubble with clover on Nov. 29th. An examination of the crops of some I shot showed that they had not touched the clover-stems or leaves, though I have heard it said that a flock will "graze it off like sheep." But by the latter part of December they had disappeared. They entirely left a favourite farm at Bloxham, and during a long walk in Bodicote and Adderbury parishes the only Larks we saw were half-a-dozen looking very much out of place on the river-bank.

WOOD LARK.—On Dec. 9th, 1890, I observed, on a stubble at Wickham, a flock of about twenty short-tailed Larks, which had, when on the wing, a soft cry, "lu-eee." I think they must have been of this species.

CHAFFINCH.—A very big flock on a stubble at Wickham, on November 23rd, 1889, apparently all females. Round a rick on December 20th, 1890, females outnumbered males by ten to one.

BRAMBLING.—Six were netted by some ricks at Bloxham on Dec. 19th and 20th, 1890; they are known here as "Mountain Finches." Mr. Wyatt had a few at the end of the month, and Mr. Darbey, of Oxford, also had a few.

HAWFINCH.—A nest containing young was found at Sarsden in June, 1890. Mr. Lambert has an egg taken near Iffley about 1883, and about that year saw two eggs taken from two separate nests near the same place.

GOLDFINCH.—Several pairs bred in and about Bloxham village in the summer of 1890.

SISKIN.—I saw a little party of five in some alders by the stream just below the village, on Nov. 29th, 1890. Mr. Fowler saw two Siskins in Christ Church Meadows on April 30th, 1890. The Earl of Winchelsea writes me word of a nest containing five eggs which he found on Headington Hill in May, 1873. The nest was satisfactorily identified. Lord Winchelsea has most kindly presented me with one of the eggs (the remainder being in

his collection), as he thought a memento of it should remain in the county in which the nest was found.

LESSER REDPOLL.—In Oxon seems to be confined, in the breeding season, to the Oxford Parks and immediate neighbourhood. I can only account for this by the fact that numbers of birches (favourite trees of the Redpoll) have been planted there; this being a scarce tree in Oxon, and according to Mr. Druce ('Flora of Oxfordshire'), a doubtful native. Mr. Fowler, writing to me on May 24th, 1889, says Redpolls "are abundant at 'Parson's Pleasure.'" Mr. Lambert has furnished me with the following list of nests seen by him in this locality:—1883, five eggs (this is the one mentioned in my work); 1885, May 27th, one egg; 1886, May 13th, five eggs; same year, May 6th, two eggs—two females were unfortunately shot that year; 1887, one nest with five young, and another newly built; a third which bore traces of having been used in the spring, was discovered in the autumn. Mr. Fowler saw a pair in the Oxford Parks in June, 1890. These birds were unusually numerous in North Oxon in the autumn of 1890—in consequence, probably, of the exceptionally large crop of alder seed. I saw six in a big alder at Bodicote Mill, on Oct. 19th. Mr. Fowler wrote from Oxford, on Nov. 26th, "Unusual numbers of Redpolls lately." On the 29th I saw a small flock at Bodicote Mill, and three and a "charm" of seven Goldfinches in the alders here at different times of the day on the 30th. On Dec. 3rd a Redpoll, shot somewhere near here, came into my hands, in the flesh—a rather large bird; and the next day I saw a little flock in alders near the railway station.

CROSSBILL.—The nest mentioned in my book (Addenda) as found at Iffley in 1888 was found in February, 1887, by "J. W. S.", who, in reply to my enquiries, communicated particulars to the 'Oxford Times.' It was found about the 19th, in cold weather, in a clump of fir trees. It was placed on a branch near the trunk of the tree, and was formed of twigs of the tree it was built in, lined with hair and fibre and a kind of down. The eggs were three in number, and the bird, which was near the nest, seemed quite tame. It was of a "brick-red" colour. I am acquainted with the finder's full name.

HOODED CROW.—One was caught at Wickham Mill, near Bloxham, about the middle of February, 1889. At the end of January, that year, I heard of one which had been consorting with

Carrion Crows at Sibford for some weeks. A very small specimen (less than an ordinary Rook) was shot at Byfield—outside our borders, in Northamptonshire—at the end of December, 1890.

ROOK.—Of four dozen young birds shot at Bloxham Grove, May 14th, 1890, half had a portion of the lower mandible light-coloured, generally a spot near the base, one or two had the whole base light; one-quarter of them with some white feathers on the chin, and two or three with white chins; one of these last had also a large portion of the lower mandible pinkish white, one primary and one primary-covert in the near wing pure white, three claws on one foot and one on the other pure white, one toe-joint and parts of others, especially the under side, dirty white.

SWALLOW.—One was seen over the Isis at the Gut, Iffley, on March 29th, 1890, by Mr. Joe Wilson, of Mill Hill, Iffley. He never saw one before April 9th in previous years ('Oxford Times').

SAND MARTIN.—Mr. Melliar Foster Melliar, of North Aston Hall, informs me that ever since he has lived there Sand Martins have nested in the kitchen-garden wall; this is for a period of about thirty years. A few years ago they used to breed in an old stone wall in the village of Adderbury; and Mr. J. R. Earle found a nest in a hole between the bricks underneath a bridge of the London and North-Western Railway at Oxford (Zool. 1884, p. 71). There is, or was, a large colony in a cutting of the railway near Littlemore. I saw the birds swarming there in May, 1880.

SWIFT.—On Aug. 22nd, 1890, I counted eleven Swifts in the air over the buildings of All Saints School, Bloxham, where they have a breeding colony; others were screaming round the church at the other end of the village. They have often entirely left us a week earlier.

NIGHTJAR.—The Rev. Murray A. Mathew writes me word that when he was at Oxford the Nightjar was common in Stow Wood, where he saw it every evening when he visited the wood to collect moths. I purchased from Mr. Wyatt the fresh skin of a bird in first dress—hardly full-feathered indeed—which was shot while flying round an oak tree at Epwell on Sept. 8th, 1889.

CUCKOO.—A good example of the red phase, a young bird, was killed near Banbury in the second week in August, 1889. Upper parts warm rufous, rather light, narrowly barred with brown, and some feathers tipped with dirty white. Under parts tinged with buff, and under tail-coverts warm buff. No part of

the under surface was of the ordinary white or greyish ground-colour.

HOOPOE.—The Rev. C. W. M. Bartholomew, Rector of Glympton, wrote me word as follows:—"As to the Hoopoe, my little boy of ten came to me and described a bird he had seen in Glympton Park last April [1889]; he had seen it go in and out of a round hole (made probably by a Green Woodpecker). His description of the markings, crest, and pink colour made me guess what it was. I went up with him to the deer park, and we watched, but in vain . . . I have no doubt it was"—a Hoopoe.

KINGFISHER.—Mr. Darbey had sixteen in his workshop in course of preservation, in the first week of December, 1890. On the 22nd of the same month Mr. Wyatt told me he had received eleven lately. I was informed, on good authority, that a man who had been for a walk with his gun along the Cherwell near Banbury, in the early part of the frost of 1890-91, returned with sixteen Kingfishers in his pockets.

GREEN WOODPECKER.—Two were picked up dead at the end of December, 1890. Like those found in the winter of 1880-81 (especially January), they had their tongues stretched out to their full length.

GREATER SPOTTED WOODPECKER.—A female bird was shot at Broughton on Feb. 15th, 1889, and another of the same sex at Finmere about the same time. One was seen by a friend of Mr. Lambert at Marston on Dec. 15th, 1889. One morning the Rev. M. A. Mathew met a boy just outside Christ Church, in St. Aldate's, carrying a fine live male in a cage; it was just caught, and, he presumed, on the nest. An adult male was unfortunately shot in a row of pollard willows at Banbury on May 27th, 1890. It had evidently been sitting on eggs. Another male was shot at Bodicote early in December, 1890.

LESSER SPOTTED WOODPECKER.—One was seen in Trinity College Gardens on March 13th, 1890 (Mr. W. G. Reeve *in litt.*). A nest, from which the young had just emerged, was found by Mr. Lambert in a hole in a small partly-decayed branch of a tree near Old Marston on June 15th, 1890.

WRYNECK.—The present rarity of this bird is remarkable. One which Mr. Lambert saw in the Parks at Oxford on Sept. 12th, 1886, was the only one he had met with there down to the close of 1889. I heard one of these birds at Bloxham about 6 a.m. on

April 15th, 1889. I heard the note of this bird in the trees near the Banbury Cemetery on April 29th, 1890. A Wryneck was very noisy in the trees in College Close, Bloxham, on May 8th, in the same year, and the next day I watched him through the glasses flitting and creeping about the rugged trunks and branches of some old ash trees. Mr. Lambert saw two near Horsepath on May 1st, 1890.

STOCK DOVE.—The Rev. J. E. Kelsall observed a pair, apparently breeding, in the large quadrangle of Baliol College; they were under the trees in the early morning at various times from March to June, 1884 and 1885 (*in litt.*). The Stock Dove is now (1891) a common bird in and about Oxford, Magdalen Grove, St. John's and Trinity Gardens, Christ Church Meadow, &c., and is sometimes wonderfully tame.

SAND GROUSE.—'The Field' for Oct. 19th, 1889, contains a report of three seen on the 15th on the high sandy railway bank between Reading and Twyford. This part of the line is in Berkshire, but only a short distance over our borders.

SPOTTED CRAKE.—Mr. Lambert bought one in the Oxford Market on Oct. 9th, 1889. A good example of the adult was picked up dead under the telegraph-wires near Banbury on Sept. 1st, 1889. A bird of the year was killed at the same place in the middle of the month.

WATER RAIL.—A young unmoulted bird, in plumage not often seen—here at least—hit the telegraph-wires, and was picked up near Bloxham, close to the house which used to be the 'Green Dragon,' on the Banbury road, on Oct. 7th, 1889.

MOORHEN.—An albino Moorhen, caught on the lake at Sarsden, was sent to the Zoological Gardens about the year 1887. In 1889 either one or two others were seen.

RINGED PLOVER.—Mr. Lambert saw one on Port Meadow on April 22nd, 1890. It was gone the next day.

GREY PHALAROPE.—One was caught on the canal just above Banbury on Oct. 8th, 1889. It was swimming on the canal, and was driven to the bank with a pole. Another was shot on the Sorbrook at Wickham Mill, near Bloxham, on the 12th. Both these birds were changing into winter dress. Mr. Darbey had two more in the same month, which were shot on the Isis near Culham.

WOODCOCK.—A little bright red bird, with rump and upper

tail-coverts plain, unbarred, bright rufous, was picked up close to Banbury at the end of December, 1890.

SNIFE.—Mr. Lambert flushed one in long grass—ankle-deep in water in places—on Otmoor, near Beckley, on May 5th, 1889. The bird went away, and I do not think would be breeding. This is the only note I have of the Snipe in Oxfordshire in May, and I have none for June. In the “Shooting (Moor and Marsh)” volume of the Badminton Library, particulars are given of the heavy bags made at Blenheim, in the upper, marshy end of the lake, when the water is low. In Bewick’s ‘British Birds’ (1821, vol. ii. p. 77, note), it is stated that Mr. Tunstall mentions a very curious pied Snipe, shot in Botley Meadow, near Oxford, by a Mr. Court on Sept. 8th, 1789. I do not know where Tunstall’s original record is; I do not find it among his notes in Fox’s ‘Synopsis of the Newcastle Museum.’

DUNLIN.—Two were seen on Port Meadow on Oct. 2nd, 1889, by Mr. Lambert. One, in winter dress, was shot from a bunch of five from a wet ditch in the “marshes” at Banbury on Nov. 29th, 1890, and came into my possession. Mr. Lambert saw about fifteen on Port Meadow on April 22nd, 1890; they wanted the black breast. They were probably immature birds.

LITTLE STINT.—Mr. Lambert saw on Port Meadow on Oct. 2nd, 1889, two birds which, from his description, must have been either Little or Temminck’s Stints. They were flying with two Dunlins, which they resembled in shape, but were of the size of a Sparrow.

COMMON SANDPIPER.—I observed one on the banks of the Cherwell at Bodicote on April 20th, 1889; this is the earliest date at which I have ever met with it. Mr. W. G. Reeve, of Trinity College, wrote me word on June 8th, 1890, that a pair had “been living for upwards of a month on the shingly banks of the river between Sandford and Nuneham.” Mr. Lambert saw them on Port Meadow as early as April 21st, 1890.

GREENSHANK.—A Greenshank was shot in the Cherwell, opposite Bodicote, on Aug. 14th, 1890, and was brought, in the flesh, to me the same day. In company with another, it frequented the “scours” in the river (which was rather low) since the 10th. The same day I went with the man who shot the bird to look for the other, but we could not find it; I saw four Common Sandpipers, very tame, and I think birds of the year.

BAR-TAILED GODWIT.—Between 1 and 2 a.m. on Aug. 1st, 1889, I heard the call-notes of waders, and on hurrying to the window, recognised at once the well-known “lou-ee, lou-ee” of this species. The birds were passing S.W., the direction taken by so many birds which pass over this district in autumn, and must have been flying low, as their notes were very loud and distinct. Air quite still, stars shining, but a little obscured by mist.

CURLEW.—One was shot at Sibford, and sent to Mr. Wyatt on Jan. 26th, 1889.

BLACK TERN.—Mr. W. Salter, of Summerfield, near Oxford, records observing one flying with Swifts over Port Meadow on June 6th, 1889 (‘Field,’ June 15th, 1889). Four birds, from the description given, evidently of this species, were reported to Mr. Fowler as seen on the Isis at King’s Weir, between seven and eight in the evening of May 25th, 1890.

COMMON TERN.—Mr. Darbey had several, shot on the river at Oxford, in Sept. 1889, as he almost always has at that season. One shot near Kennington Island on Oct. 17th, 1890, is recorded in the ‘Oxford Times.’ I have examined recently an adult shot at North Aston Mill in either October or November, 1889.

GULLS.—A Common Gull, in immature dress, was shot close to Banbury on Dec. 3rd, 1889. A Kittiwake was killed with a stone from a flock of half-a-dozen at Ferry Hinksey (on the borders near Oxford), on Oct. 24th, 1885, and came into Mr. Lambert’s possession. He tells me that a Black-headed Gull was seen at Port Meadow on July 1st, 1888. A specimen of the Little Gull was shot at Sandford, on the Isis, on Oct. 17th, 1890, and preserved by Mr. Darbey. I did not see the bird, but Mr. Darbey was quite sure of it, and told me that it was like a Black-headed Gull in winter dress which was before us as we talked, but did not look half the size, and measured only about ten inches in total length, he should say. A Black-headed Gull was shot at North Newington, about Dec. 8th, 1889. It had a rather dark head, and was approaching adult plumage, as there was one pure white unbarred feather in the tail. An adult Kittiwake was shot at Tadmarton on or about Jan. 30th, 1890. On April 24th I saw three Herring Gulls, apparently adult, flying over Bodicote low down, between 6 and 7 p.m. They were going exactly N.E., wind then N.N.W., very light. Two Gulls were

seen about mid-day, wheeling over Bloxham, by a late friend of mine. Another friend saw a Gull pass over the village, going N.E., on the 10th. A Black-headed Gull was seen by Mr. Lambert on Port Meadow on April 22nd and 23rd, 1890. Many Common Gulls were obtained in March, 1890. Mr. Darbey received upwards of a dozen for preservation from Radley, Lechlade, Wolvercote, Steeple Aston, &c. Some were in an exhausted condition; one was caught by a child, and another was picked up dead. On the 22nd the recorder saw one flying over Port Meadow (F. W. Lambert, in 'Oxford Times'). The Rev. W. Croke Robinson, of Kensington, has kindly written me word that in the early spring of (about) the year 1853, when living in his father's rectory at Stonesfield, he saw four or five large birds fly over the bottom of the garden. One of them was shot by a labourer named Townsend, who brought it to the Rectory. They had a professional opinion upon it, and it turned out to be a Glaucous Gull. I have no other record of this species in Oxfordshire, and am glad to add it to the list of rare visitors to the county.

POMATORHINE SKUA.—An example, in immature dress, was caught alive at Finmere at the end of December, 1890.

FORK-TAILED PETREL.—An example, which I have examined, was picked up dead at Chadlington early in December, 1890.

STORM PETREL.—Mr. Wyatt had a nice adult bird, now in Mr. F. C. Aplin's possession, which was captured on the canal a mile or two above Banbury, on Oct. 28th, 1889. One shot on the Isis near Kennington Island on Oct. 17th 1890, by Mr. J. W. Mountain, is recorded in the 'Oxford Times.' "H. J. B." recorded in the 'Oxford Times' that on Nov. 23rd, 1890, he saw a flock of seven or eight of these birds over the river Ray in Otmoor, near Islip. I am acquainted with the recorder's name.

PUFFIN.—A bird in its first autumn was caught alive at Chipping Norton on Oct. 26th, 1889, and was seen by me some time afterwards.

GREAT NORTHERN DIVER.—A male in immature plumage was shot in the Cherwell near North Aston Mill during severe frost in 1864, by Mr. Foster Melliar, in whose possession it now is.

RED-THROATED DIVER.—An example, intermediate between the immature and adult winter dress, was caught alive close to Banbury on Dec. 11th, 1890. Through the kindness of its owner, I was able to see it the same day. It took a sprat out of a basin

of water, but dropped it; later it ate two which were put into its basket with it.

GREAT CRESTED GREBE.—One was shot on Otmoor in January, 1889, and taken to Mr. Darbey, of Oxford. Mr. Fowler and I visited Clattercote Reservoir on June 24th, 1890, and saw one pair which had apparently lost their young, and another old bird, whose mate was probably sitting.

SCLAVONIAN GREBE.—One was killed at Hook Norton at the end of December, 1890. I saw it a few days later.

BITTERN.—One was shot near Bletchington about Dec. 25th, 1890. A good many Bitterns were recorded in 'The Field' about this time from various parts of the country.

WILD GEESE.—Mr. Foster Melliar saw, as he believes, seven Wild Geese flying low over North Aston Hall on a foggy evening at dusk on Nov. 23rd, 1889. On the evening of Sept. 21st, 1889, I am informed that a considerable flock of Geese were seen flying over Banbury about 7 p.m. They passed from north to south, wheeling round once or twice before going on. George Brown, of Bodicote, a good wild-fowler, saw the Geese about 9 p.m. They came from the Cherwell Valley, and pitched on a wheat-stubble in Bodicote parish; when put up they went to another stubble, and yet another, and then probably went on, for when Brown (who had no gun that night) went out at daylight the next morning he could not find them. More Geese were seen over Banbury on the 23rd, about 8 p.m. They seemed bewildered with the lights, and remained for some minutes flying round just above the roofs of the houses. People who saw and heard them said the calls resembled those of domestic geese somewhat. Mr. Wyatt saw half-a-dozen Grey Geese in the valley at Williamscote on Nov. 6th or 7th, 1889. A White-fronted Goose in nearly, if not quite, adult dress, was shot at North Aston Mill, with another, out of a skein of twenty, on or about Dec. 14th, 1890. Mr. Wyatt heard of Wild Geese in the Cherwell Valley near Croperdy, in the second week in December. Three were shot in the valley at Twyford, near Adderbury, in the third week in December, and about the same time the shooter saw "gaggles" or "skeins" of thirty-seven, seven and three. Those shot were unfortunately plucked before I saw them, but from the colours, as described to me, the dark slate-coloured "nail," yellow legs, and absence of white on the face, there is no doubt that they were Bean Geese.

Mr. S. Sargeant, of Handborough, records in the 'Oxford Times' that he saw four Wild Geese feeding on the banks of the Evenlode near there, on Dec. 10th, 1890. On the 25th half-a-dozen were seen at Mill Bridge, near Adderbury, by a man named Brown, who is well acquainted with wildfowl. During my absence from home some Geese frequented this parish, between here and Barford. On the 26th, twenty-four were seen on some young wheat (snow-covered); the next day they flew over a friend's head, quite low down, when he had no gun; and on the 31st they were round a waggon-load of pea-haulm standing in a field, running about, said my informant, "like a lot of turkeys."

BRENT GOOSE.—There is a specimen (with a medium-coloured belly) in the Oxford Museum, labelled "Kennington, Oxon, 1830. C. Webb, Esq." It is in such a position that the label can only be read by almost lying down on the floor, and I overlooked it until after the 'Birds of Oxon' was published.

SHELDRAKE.—One was seen on the Isis by Port Meadow, on Oct. 8th, 1889, by Mr. Lambert (Zool. 1889, p. 453). I have recently examined a specimen of the adult which was shot on the Cherwell at North Aston Mill in the winter of 1889-90.

WILD DUCK.—A hybrid between the Pintail and Wild Duck was shot near Standlake about the second week in March, 1851, and was brought into Oxford Market with other fowl. It passed through Mr. Osman's hands into the possession of the recorder (Mr. A. M. Norman, Zool. 1851, p. 3175).

GADWALL.—The Rev. Murray A. Mathew writes:—"I still possess a Gadwall which was purchased in Oxford Market. It was lent (stuffed) as a model to the artist decorating the walls of the new debating room at the Union." In a later letter he says:—"At the time (and ever since have) I considered it a local specimen; for, as you correctly state, no foreign wild ducks were at that period sold at Oxford Market, and wildfowl of any kind were rarely to be seen on sale. Immature Golden-eyes, Pochards, and Wigeon, all of them known to town-gunners as 'currees,' were not uncommon in my time on the Thames (or rather Isis), especially along Port Meadow and above Godstow, and one or two of them would sometimes be seen in the market."

SHOVELLER.—A duck was shot from a party of four on the river at Iffley, on Nov. 12th, 1889, and was taken to Mr. Darbey, as he informed Mr. Arthur H. Macpherson.

TEAL.—Two were seen by Mr. Lambert on the river adjoining Port Meadow on Sept. 19th, 1890.

GOLDEN-EYE.—Mr. Sargent records, in the 'Oxford Times,' that he shot one on Dec. 10th, 1890, on the Evenlode between Handborough Mill and Eynsham. Mr. Darbey informs me that he had two or three more during the winter; and a duck recorded, in the 'Oxford Times,' as a Buffle-head, shot near Ditchley early in December, was, I believe, from the description I had of it, nothing more than a female Golden-eye. I think one of the above-named birds was possibly a Scaup, but I have not seen it.

COMMON SCOTER.—A beautiful old drake, in fine plumage, was shot on the moat at Broughton Castle on Oct. 23rd, 1890. Another fine drake, shot at Weirs Mill, between Iffley and Folly Bridge on Dec. 12th, is recorded in the 'Oxford Times.'

WINTER NOTES FROM SWITZERLAND AND NORTH ITALY.

By A. HOLTE MACPHERSON, B.C.L., M.A., F.Z.S.

IN November last I started for a few weeks' holiday, which, after a few days' rest at Lucerne, I spent in North Italy. Being alone and ignorant of Italian, I took an ordinary circular ticket; and the following notes from my diary, though comprising nothing particularly new, may perhaps be of interest in so far as they indicate some of the birds which may be met with by an observer who remains entirely on the beaten track of tourists.

On Nov. 14th I arrived at Lucerne, and found the Coots on the lake as numerous as ever; there were also a good many Little Grebes, and some Black-headed Gulls, one of which—perhaps an old bird—still retained an almost complete dark hood. Towards sunset several flocks of Wild Duck were seen flying to the south, but were too far off for identification. A long stream of Alpine Choughs, *Pyrrhocorax alpinus*, also passed across the lake; they were at a great height, but in the stillness of the evening their curious cry—like a cork being screwed out of a bottle—was distinctly audible. At first I thought this might be a movement of a migratory nature, but as I saw some a few evenings later at the same hour, probably they were merely returning from their feeding grounds, just as Rooks do.

Nov. 15th. A drake Tufted Duck was diving close to the shore, and during an afternoon walk I saw three Buzzards, some Ring Ouzels, and a number of Coal Tits, Nuthatches, and Crows.

Nov. 16th. A fine day. Set out for an expedition up the Rigi (5675 ft.), accompanied by the Rev. W. Marriner, who was staying at Lucerne. The first bird observed on commencing the ascent above Vitznau was a fine grey-backed Marsh Tit, *P. borealis*, but as we mounted higher the absence of the Tits and Goldcrests, which swarm on these hill-sides in summer, became very noticeable. After rising about a thousand feet, we found a Lesser Spotted Woodpecker; and shortly afterward I suddenly came upon a species I had long wished to see—the Three-toed Woodpecker, *Picoides tridactylus*, hammering away loudly on the trunk of a tree. The yellow crown was not very conspicuous, and it was apparently a young male bird. Only that morning M. Stauffer, the naturalist at Lucerne, had shown me a fine series of skins of this species, all obtained in the neighbourhood, where it is evidently fairly abundant, though during a previous visit to Lucerne, in July, 1886, I was unable to find it. On resuming our upward journey nothing more of interest appeared till we were at a height of about 4000 ft., when, just as we reached the thin coating of snow which covered the upper portion of the hill, a flock of Snow Finches, *Montifringilla nivalis*, flew by, twittering loudly, and showing a good deal of white in the bright sunshine. On reaching our destination we had a short rest, in order to have some lunch and enjoy the view, which was most beautiful, and then commence the descent. It was now afternoon, and the side of the hill up which we had come was enjoying the full benefit of the sun, and birds were far more numerous. There were numbers of Great Tits, Crows, Jays, Nuthatches, and Green Woodpeckers (*Gecinus viridis*, we did not see *canus*). When we reached the level of the fruit trees (about 1000 ft.) we unexpectedly came upon a Nutcracker, *Nucifraga caryocatactes*, busily engaged in a cherry tree; this bird allowed us to have a splendid view of it before it flew off, and in a few minutes we found several more. One was hammering on the bough of a cherry tree, just like a Nuthatch, throwing the whole weight of its body into each blow. On my approach it retired, and I climbed into the tree to see what it had been trying to break, but found nothing. A glorious sunset was

the only further thing of interest which we saw in our homeward journey.

Nov. 17th. Walked to the neighbouring lake of Zug, and saw a Dipper, *Cinclus albicollis*, which appeared extraordinarily pale, the head being almost fawn-coloured. There were numbers of Magpies and Jays about. In the evening some more Choughs flew across the Lake of Lucerne in the same direction and at about the same hour as the flock seen on the 14th.

Nov. 18th. Left Lucerne for Milan.

Nov. 19th. At Milan all the Sparrows had changed, *Passer italicæ* taking the place of *P. domesticus*. The males of the former species, in their winter dress, bear a close resemblance to our bird, for the feathers on the chocolate crown are then edged with grey. The poulterers' shops contained a number of small birds, chiefly Larks, Yellowhammers, Robins, and Sparrows, with a few Landrail, Mallard, Teal, and Wigeon. In the Museum there are a good many groups of Lombardy species, with nests and eggs, including the Great Reed Warbler, Lesser Grey Shrike, Woodchat, Little Bittern, and Scops Owl.

On Nov. 20th I went to the shop of the chief naturalist in the town, and saw two Italian Sparrows, one of which had the whole of that portion of the breast and throat which is normally black of a fine bright chestnut, and the second bird also had a certain amount of the same colour on the chest. A corresponding variation is not uncommonly exhibited by our English Sparrow, but I have only once seen it as pronounced as in the case of the first of these Milanese specimens, and that was last year in a bird on the railings in front of Lancaster Gate in the Bayswater Road. *Passer domesticus* was unknown to the naturalist here; and with the exception of a doubtful bird at Venice, which I could not with certainty identify, all the Sparrows I saw in Italy belonged to the Italian form. At Nice on the west and Trieste on the east, its place is said to be taken by *P. domesticus* (see Giglioli, 'Avifauna Italica,' p. 26), while the Alps form a good natural boundary on the north, and I believe it has rarely been observed further in that direction than the Brenner Pass. In the summer of 1886, however, I found both forms at Schuls; and this place, though actually a few miles south-west of the Brenner, may be considered as geographically further north, for it is situated at the upper end of the Valley of the Inn which flows northwards into the plain of

Innsbrück; so that the bird at this point has passed the summit of the barrier. Left Milan for Verona.

Nov. 21st. In the picturesque market-place of Verona there were many stalls covered with birds, chiefly Sparrows, Chaffinches, Bramblings, Robins, Fieldfares, Blackbirds, and many Hawfinches—fine bright birds. One man was selling live stock—Serins, Siskins, and Little Owls (*Athene noctua*). The latter are much used by the Italian birdcatchers, who place them in a conspicuous position, in order to attract the small birds, which come in crowds to mob them. This use of Owls by fowlers is evidently very ancient, for it is mentioned by Aristotle ('History of Animals,' Book IX. chap. ii.). There is also a Museum at Verona, which contains a gallery with "Avifauna Veronese" written up over the doorway. The collection consists of about four hundred specimens, including some American forms (e. g. *Turdus migratorius*, *Ectopistes migratorius*, and *Tringa macularia*), but unfortunately none of the specimens have labels attached. I noticed some Starlings in the town, but saw absolutely nothing during a walk along the banks of the Adige, and in the evening left for Venice.

Nov. 22nd. On my way to church I saw from my gondola a few Herring Gulls, *Larus cacchinans*, feeding at the mouth of the Grand Canal, and showing their yellow legs very distinctly as they hovered for food over the surface of the water. *L. ridibundus* was also there in fairly large numbers.

On Nov. 23rd saw what I believe to have been a cock Sparrow, *P. domesticus*, but could not be sure, as the bird was soaked. Rained hard all day. On the 24th left Venice for Bologna, and on the 26th moved on to Florence.

From Nov. 27th to Dec. 17th I remained at or in the vicinity of Florence. The country here is so laid out in olive-yards and vine-yards, and the roads have mostly such high walls on both sides, that to observe birds was generally quite impossible. Even when you found a clear spot the birds were very difficult to approach, and there were very few of them; they are shot at and trapped on all sides, and are consequently very wary, observing you long before you observed them. There is a fine market in Florence, and during my daily visits I picked up one or two specimens for skinning—e. g., *Lanius excubitor*, *Sylvia melanocephala*, *Acredula Irbyi*, *Serinus hortulanus*, *Melanocorypha calandra*, and *Cinclus albicollis*. The birds seen in this market would make a

long list, and included the Blackcap, Wryneck, Greater Spotted Woodpecker, White Wagtail, Wood Lark, Cirl and Meadow Buntings, Dotterel, Dunlin, Ring Ouzels, Little Bustard, and many others.

On Nov. 29th a Blackcap was singing in a public garden in Florence. It need hardly be said that the specimens in the market with chocolate heads were, from their size, apparently all females. On Dec. 10th, while skinning *Acredula Irbyi*—the only specimen of this form which I obtained—in a garden near Florence, I heard a Warbler trying to sing in a thick shrub close by. The song was not unlike that of a Garden Warbler, but it was more intermittent, and the bird was singing in a half-hearted manner. After some trouble I managed to get a good look at the singer, who proved to be the Sardinian Warbler, *S. melanocephala*, a most beautiful bird, with his coal-black head and pure white throat; but the most noticeable point about him was his bright salmon-coloured eyelids, which showed out much more clearly in the live bird than in either of the specimens I obtained in the market. This species was very common in the neighbourhood, and always betrayed its presence by a very loud and resonant “chat, chat.” I was somewhat surprised at hearing the song in December, but apparently it is not unusual, for Dresser, in his ‘Birds of Europe,’ quoting Irby, says, “its song is to be heard at all seasons.” It is worth mentioning that there were many male birds in the market, but only one female, and she was too far advanced to skin; she showed the same brightly-coloured eyelids as the male bird. On my first visit to the market I found a curious variety of the Calandra Lark with white secondaries: this bird, lying on a heap of others, made me for a moment think I had got hold of a White-winged Lark—which is nearly as great a rarity in Italy as here.

A Dipper from the market, which came from the Appenines, was a fairly typical *Cinclus albicollis*. *C. aquaticus* and *melanogaster* also occur in Italy, but are rare. Except in the colouring of the upper parts, my Florence bird does not differ materially from two Norfolk specimens in my collection, though the red on the belly is much less bright than in a bird from Devon, but rather brighter than one labelled “Silesia.”

Through the kindness of Prof. Gigholi, I was able to spend some very pleasant afternoons in the Museum at Florence

examining the splendid series of Italian birds which he has set up, and which is by far the best collection of the kind in the country.

As to the live birds in the various dealers' shops, they were mostly Siskins, Serins, and Sparrows, but there were also a good many Bullfinches, Goldfinches, Tree Sparrows, and Linnets. Before starting for England I procured two Blue Thrushes, *M. cyanus*, and a fine male *Passer italiae*, which latter has remained throughout the winter in full summer plumage. The journey home through Mt. Cenis was terribly cold, and the Thrushes would probably not have survived had they not been dosed with Marsala in the middle of the night. Luckily they eventually arrived alive, although one succumbed shortly afterwards to the London fog at Christmas.

The winter is not a good time for birds in Italy, and even waders and ducks were almost entirely absent from the markets and shops; but these rough notes, which are mostly copied from my journal, may serve to give some idea of the species to be seen by the ordinary sight-seer at that season.

In all, I either saw alive or handled in the flesh nearly a hundred species, including about a dozen which I would not have come across in England.

NOTES AND QUERIES.

MAMMALIA.

Deer in Snowdrifts.—To give some idea of the depth of snow and drift in the north of Scotland last winter, in the parish of Lairg, a month or two after the first thaw set in, two full-grown Stags were found dead in a hollow in one of the burns there, being smothered by the drifting snow. The first thing one of the keepers saw was the Stag's antlers above the snow, which he took at first for the branch of a tree; but when he went near he found that it was a Stag that had been smothered standing on his feet. A week or so after this, when more of the snow was melted, the other Stag was found; but this one had been smothered while lying down. He was close beside his comrade.

Marten in Co. Wexford.—I write to record the capture, on May 1st, at Coolbawn, Co. Wexford, by my friend Mr. Arthur Rutledge, of a young

Marten, which now—presented by its captor—is an inmate of the Dublin Zoological Gardens. It is the only Marten at present in the Gardens, specimens of this animal being now difficult to procure. What adds to the interest of this capture is the fact that Wexford was not hitherto one of the Irish counties in which the Marten was known with certainty to survive; and though the beautiful woods of Coolbawn, lying near the mountain frontier of the western side of the county, afford protection to a number of wild creatures more or less uncommon in open districts throughout Ireland, such as the Jay and the Squirrel, no suspicion of the presence of Martens in that neighbourhood had been in any way aroused until the moment when the animal itself was found, taken—as Mr. Ruttledge informs me—in a trap set for rabbits, in a rabbit-hole in a fence bounding some tillage, and about a hundred yards from the plantation. The Marten, when it reveals its presence at all, generally does so by its depredations among poultry, young lambs, &c. There having been no suspicion of its proximity in the present instance shows how easily this wary nocturnal creature may escape detection in any part of the country sufficiently wild to afford it concealment. I have no doubt that other Martens survive at Coolbawn, and elsewhere in the county.—C. B. MOFFAT (36, Hardwicke Street, Dublin).

Earliest use of Foxhounds.—In 'Countrey Contentments,' by "G. M." [Gervase Markham], 1615 [1st ed. 1611], the writer gives a description of the Hound best suited for hunting the Fox and Badger, which is interesting as showing that at this date it was no longer the universal habit to hunt the fox with all kinds of dogs indiscriminately. This seems to be about the earliest indication of the recognition of a Foxhound, as distinguished from the varieties of hound used for chasing other game. Harrison, who wrote his description of England about 1577–87 A.D., merely classes together, under the name of Harriers, all the hounds used for hunting "the fox, the hare, the wolf (if we had any), hart, buck, badger, otter, polecat, lopstart, weasel, conie, etc.," but he does not mention the breeds used for any of these various forms of sport.—A. HOLTE MACPHERSON (51, Gloucester Place, Hyde Park).

[The *lopstart*, or *lobster*, is a provincial name for the Stoat. As to the origin of the name, see Zool. 1884, pp. 112, 153, and 1888, pp. 20, 65.—ED.]

Polecat in Pembrokeshire.—From all I can learn from trustworthy sources, the Polecat is now extinct in this county. It never was common here. The last was killed in a large wood called Penkelly Wood, about fifteen years ago. I learn also, from the descendant of an old sporting family in Cardiganshire, that it was the invariable rule of all masters of Foxhounds never to whip them off a Marten Cat, which they hunted as eagerly as a Fox. This agrees with my experience of the Marten killed

with Foxhounds in Carmarthenshire, and already referred to by me.—
E. CAMBRIDGE PHILLIPS (Brecon, S. Wales).

White and Pied Stoats.—I have seen albino Stoats, but never a true white one. Piebald Stoats are, however, not very uncommon. Years ago my brother had a remarkably large piebald buck Stoat that was killed in a rat-trap in our house, in the Co. Dublin. About the same time a smaller one was caught in a trap set in a rabbit-run. I shot a piebald Stoat at Portraine, Co. Dublin, and I saw a very white one chasing a rabbit in Coole Park, Co. Galway. Others that I have seen were in the Burren, Co. Clare, and in the crags of Galway, Mayo, &c. In general, when you see anything of the kind you have not got a gun, and anyone who has tried to catch a Stoat in an old wall knows what a task he has. Years ago, near the N.E. end of Lough Graney, Co. Clare, there was a farmer who used regularly to feed the Stoats, as he said if he gave them their meal of milk they never went near the hen-roosts. Besides, he said that they kept strangers away, and that the bucks used to get as "white as snow in the winter." This latter assertion, however, I will not vouch for, as I have often heard of a hare "as white as snow" that did not answer my expectations when I shot it. In my boyish days a Stoat-skin purse, or, as they were nearly universally called in Ireland, "a Weasel-skin" purse, was considered lucky, while a piebald Weasel-skin purse was the height of luck. I had, and perhaps have still, a piebald Marten-skin, the Marten having been killed in the wood, near Castle Kirke, Lough Corrib.—G. H. KINAHAN, in 'Land and Water.'

CETACEA.

Delphinus tursio in the Colne.—On the morning of May 29th last, a man named John Crosby was walking by the side of Mill Creek, Fingringhoe, when he discovered some large Porpoises in a shallow part of the creek, unable to pass downwards, in consequence of the receding tide leaving too little water on a bank below. With the help of some of his friends, whom he had called to his assistance, a slip-noose of rope was passed over each, and they were drawn on to the marsh, and dispatched by cutting their throats, pig-fashion. I saw them in the afternoon, and found them to be two male and one female "Bottle-noses," *Delphinus tursio*, a Dolphin not rare in our estuaries. The female measured 10 ft. 3 in., the largest male 10 ft. 1 in., and the lesser 5 ft. 10 in., from the tip of the nose to the notch in fluke, respectively.—HENRY LAVER (Colchester).

BIRDS.

Variety of *Grus cinerea* in Spain.—About the end of April last I heard from Seville that the Comte de Paris had shot a white Crane in the Marshills below Seville; and as my informant had not seen the bird, and

could only give me a hazy description of it, I took the liberty of writing at once to H.R. Highness (with whom I had previously had certain ornithological correspondence) to ask for particulars of this occurrence. The Comte replied to my enquiries most promptly and obligingly, informing me that this Crane had for two months been keeping company with a large flock of its own species; but when the others left the district, on the northward migration in March, this white one remained alone, and H.R.H.—being anxious to secure it for preservation—stalked behind a horse to within forty yards, and shot it, on April 5th ult. I received the skin for inspection on May 21st, and, as I believe that varieties of this species are by no means common, I append a full description kindly written out for me by Mr. J. Cullingford of Durham, to whom the Comte de Paris has entrusted the specimen for preservation. I am informed that it was a female.

“Description of skin of Crane, *Grus cinerea*, ♀, shot by H.R.H. the Comte de Paris, in the Coto del Rey, Andalucia, April 5th, 1892:—Hair-like feathers on head, brown; feathers below the occiput for three inches, grey; the malar region, throat, and portion of neck for ten inches, grey,—a broad white band from the eyes separating the grey of the occiput from that of the throat; the back of neck and the whole of the back and rump almost white, slightly tinged with grey; the longest feathers in the scapulars have the shafts towards the ends pale brown, the feathers on each side a little paler, shading into white; the tail-coverts are grey, of two shades; the base of tail almost white, and the terminal portion grey. The primaries dark brown; the secondaries pale brown, the innermost elongated feathers almost white, shading into brown; wing-coverts nearly white, excepting three or four feathers which have brown ends. The lower portion of neck and the whole of body white.”—LILFORD.

Iceland Gull in Kinsale Harbour.—It may interest Mr. R. Warren, and possibly others of your readers, to know that I observed an immature specimen of the Iceland Gull, *Larus leucopterus*, in Kinsale Harbour, on May 15th, among some Herring Gulls.—H. LEYBORNE POPHAM (Yacht ‘Merganser,’ R. W. Y. C., Valentia).

Supposed occurrence of Ivory Gull in Co. Dublin.—The White Gull stated (p. 228) to have been seen on the Liffey, between Essex and Carlyle Bridges, on April 19th, was more likely, I think, to have been a specimen of the Iceland Gull, *Larus leucopterus*, than of the Ivory Gull, *L. eburneus*. It was probably a straggler from the flight of Iceland and Glaucous Gulls that visited our north-west coast last winter, of which several specimens of both species were obtained on the coast of Donegal, and of the Iceland Gull on the Sligo and Mayo coasts. The Ivory Gull is such a rare visitor to Ireland that only two specimens have been obtained that could be recorded with any certainty; one, mentioned by

Thompson as having been obtained by Mr. R. Chute, near Dingle, in Co Kerry, in February, 1846; and another, an adult bird, was sent from Bantry Bay, in the winter of 1852, to my old friend the late Dr. Harvey of Cork, and is now, I believe, in the Natural-History Collection of the Queen's College in that city. Several reasons may be given for inferring that the bird seen on the Liffey was an Iceland Gull; and the fact of its being so far from the sea, feeding in the company of the smaller Gulls, goes far to prove that it was an Iceland Gull; for this bird often associates with the smaller Gulls, accompanying them inland to rest in the fields, and feed after the plough, where I have shot specimens feeding on worms in the company of Blackheaded and Common Gulls. The immature Iceland Gull is often so pale in colour as to appear quite white when flying amongst other Gulls, and has before now been mistaken for the Ivory Gull. Again, it is stated that the bird seen, "many times flew, hovering and swooping so close to us that the dark base of the bill was very conspicuous." Now the immature Icelander has the bill very dark,—quite as dark-coloured as that of a young Herring Gull, but as it approaches maturity the bill becomes lighter in colour; so probably the bird seen was in its third year, when the bill was beginning to clear. The bird, if an Ivory Gull, when it approached its observers so closely as to show the dark base of the bill, should have exhibited far more plainly its coal-black legs and feet, contrasting so strongly with the pure white of the under parts; indeed, the black legs and feet should have appeared more "conspicuous" than the base of the bill, and have attracted more attention, and it is strange how this escaped the notice of the observers if they were correct in their identification.—ROBERT WARREN (Moy View, Ballina, Co. Mayo).

White Partridges.—Whilst shooting at Bolnhurst, seven miles out of Bedford, on Oct. 3rd, 1890, my father shot a white Partridge; and again, on Oct. 15th, another white bird fell to his gun. Both birds belonged to the same covey, having been frequently seen together. On the wing they both appeared to be quite white, but on closer inspection the brown markings on the plumage were faintly traceable under the white, the birds having the appearance of having been washed over with a thin coating of white paint. The markings were stronger in the bird shot on Oct. 15th than in that shot on the 3rd. The legs of both were of a lighter colour than those of the ordinary brown bird, and the eyes were of a bright red colour. In size and other respects the birds were the same as their brown relatives. Both were preserved, and are now in my father's possession.—A. HASTED (Curragh Camp).

Birds observed on a Fishing Expedition to South Trondhjem.—At 9 p.m. on June 12th of last year I left Hull, by Wilson's line of steamers, for Christiana, in company with my brother, a friend and his wife, and

after a good passage and a beautiful sail up the Fjord to Christiana, arrived about noon on the 14th. We spent the evening and the next morning viewing the sights, the most interesting being the old Viking's ship and the Museum, and left by the mid-day express. In the refreshment-room at Roraas, about 2000 ft. above the sea, I noticed two stuffed specimens of Pallas's Sand Grouse, killed in the neighbourhood, I understood, in 1888; also Eagle Owl, Hawk Owl, and Tengmalm's Owl, White-tailed Eagle, and Dotterel. We arrived early on the 16th at Störren, about 390 ft., on the Gula river, and after breakfast in the comfortable inn, looking over the valley of the Gula and the charming grounds and station, all the buildings of which, as well as the hotel, were of wood, and bright with fresh paint and the brilliant sunshine, we started in carriages for our twenty miles' drive, the weather—as, with the exception of one day's rain and several heavy thunderstorms, it remained during my month's stay in Norway—being most beautiful. Our route, after a short distance by the side of the Gula, lay up the Valley of the Staavil River—a wild, rapid stream, which, like all Norwegian streams, brought down no end of timber during the season to the various saw mills on its banks—to the summit, not above the tree limit, however, at Biærkaker, about 2000 ft., and where there is a small lake. From here, having had our lunch, we commenced our descent by a steep zigzag road into the Valley of the Orkla, which we followed down to our fishing station, Grüdt Meldalen, about 600 ft., and twenty miles or so from a branch of the Trondhjem Fjord, into which it flows. The Orkla above Grüdt is a good-sized river flowing rapidly over a rocky bed, with deep pools, rapids, gravel beds, and here and there slight falls. The valley is a deep one, the more level parts cultivated, and studded with saw-mills and farm-houses. The hill-sides, very steep, were mown for hay, where not covered with wood—principally spruce and some pine, with birches and alder and a white poplar in the lower and damper ground. These woods in many places came down to the river. Above they gradually got thinner and merged into the usual Norwegian Fjeld. Below Grüdt the river becomes less rapid, and the valley opens out considerably and is more cultivated. The portion of the river seen by us is above Grüdt, so that I have no knowledge of the lower portion.

Fieldfares were nesting everywhere, after the manner of our Thrush or Blackbird, and not in colonies. Wheatear, not numerous, nesting in walls, &c., near the river-side. Whinchat, Redstart, and Redbreast, not numerous. Blackcap and Chiffchaff, fairly numerous. Willow Wren, numerous. Dipper (black-bellied). Marsh Titmouse and Great Titmouse, fairly numerous. Grey Wagtail, not common. White Wagtail, numerous. Pied Flycatcher, numerous, especially in the Valley of the Orkla, and nesting principally in the old nests of the Green Woodpecker in the straight stems of a white poplar; one nest was in one of the little boxes hung out by the natives on their houses

for birds to nest in. Swallows, uncommon. Martin, local and fairly numerous. Sand Martin, uncommon. House Sparrow, generally distributed. Chaffinch. Brambling, fairly numerous. Bullfinch, seen by my brother. Yellow Bunting, fairly numerous. Starling. Common Jay, seen by my brother. Magpie, common. Hooded Crow, with young, flying. Swift, a few pairs. Green Woodpecker, common, making the holes for their nest in the tall straight stem of the poplar mentioned above. Cuckoo, not common. Red-breasted Merganser, a few pairs by the river. Snipe, one near the summit at Biærkaker. Common Sandpiper, not numerous. Green-shank, heard at Biærkaker. Black-throated Diver, one pair on the lake at Biærkaker.

Additional birds noticed at Grüdtt were the Long-tailed Tit (the northern form, with a very white head), Coal Tit, Blue Tit (often nesting in the old nest of Woodpecker), Tree Pipit, Spotted Flycatcher (nesting in the crevices of rocks near the river), Siskin (fairly common), Tawny Owl, Rough-legged Buzzard (trapped higher up the Orkla), Merlin and Kestrel (not common), Mallard (one duck on the river), Capercaillie, Willow Grouse. I also found the nest of what I believe to be the Mealy Redpoll, but did not identify the bird.

This is not supposed to be anything like a complete list, my time having been much taken up with fishing, in which we had good sport. It is therefore only those birds which presented themselves to me that are recorded. The first part of the list includes the birds I saw during our drive over, the second to the additional ones seen at Grüdtt, with the exception of Bullfinch, Common Jay, Snipe, Greenshank, and Black-throated Diver.—F. P. JOHNSON (Castleheads, Brampton, Cumberland).

Variety of the King Duck.—I have recently received from Mr. Marsden, of Bath, a skin of a female King Duck, *Somateria spectabilis*, labelled "Iceland, 1885." On relaxing and mounting it, I find that in one wing the first *two*—and in the other wing the first *four*—primaries are white.—WM. FARREN (9, Union Road, Cambridge).

Golden Oriole in Richmond Park.—On April 25th, while riding in Richmond Park, my attention was attracted by the appearance of a yellow bird with dark wings and tail flying close to me. I presume it was a Golden Oriole. I do not think any of these birds have been seen about here before.—M. BURR (Richmond).

[The Golden Oriole, arriving in April, is an annual summer visitor, chiefly to the south-eastern and southern counties of England, and in many instances has been known to breed here. Doubtless this would happen oftener if the birds were not thoughtlessly shot on their arrival.—ED.]

Hoopoe in Surrey.—On June 26th, near the village of Oxted, I saw a strange bird flying over the road which I did not recognise. A friend

who was walking with me instantly identified it as a Hoopoe, a species which he had often seen and shot in South Africa.—M. BURR (Hazelwood, Limpsfield, Surrey).

Supplementary Notes on the Birds of Donegal.—Mr. G. H. Eastwood, of Godalming, Surrey, has kindly sent me the following notes, which were taken by him while staying at Bundoran from July to September, 1891. Lough Melvin is just outside the southern edge of the county:—

Sedge Warbler. Abundant along the Bundrowes river.

Kingfisher. Saw several of these birds along the Bundrowes. A specimen in perfect plumage was drowned in one of the eel-nets on Aug. 19th.

Curlew. According to William Despard, Lord Massy's bailiff at Lareen, Curlews breed on a small island at Lough Melvin.

Black Tern, *Hydrochelidon nigra*. "About Aug. 7th, as I was walking along the shore of Lough Melvin, a dark-coloured Tern passed me, which I did not recognise as it was getting dusk. Next day, when out fishing, the same bird came close to me, when I saw that it was a Black Tern. After this I saw it every day up to Aug. 14th, when, rough and stormy weather coming on, it disappeared. It seemed a fully adult bird, having no white about the head or throat. Whenever it approached any of the Arctic Terns, of which there is a colony breeding, several would set on it and drive it to a different part of the Lough. It appeared to be hawking for the Green-drake, *Ephemera danica*, of which there were numbers about. The flight of the Black Tern was very graceful and more rapid than that of the other Terns—more like that of a Swift, but, of course, much slower. I saw several fresh-laid Arctic Tern's eggs as late as Aug. 1st."—H. CHICHESTER HART (Carrablagh, Port Salon, Letterkenny).

Sand Martin in Co. Donegal.—I have already noticed the rarity of these birds in this county. On June 24th a pair were haunting the stream through our golf-links at Ballynatocher Strand, Port Salon.—H. C. HART.

Blackbird pairing with Thrush.—In a garden belonging to a gentleman residing in the north end of Edinburgh a pair of Blackbirds were engaged in rearing a second brood, when, after the full complement of eggs had been laid, a cat made the cock bird a widower. The poor bird, however, was not long in finding a mate ready to take the place of the deceased; but, to the amazement of the gentleman referred to, the foster-mother was no Blackbird, but a Song Thrush!—in all probability, one whose own family had just been safely reared in the same garden. Greatly interested in the new turn of affairs, my friend watched the pair closely, and found that the Blackbird was most assiduous in his attention to his partner, feeding her regularly during her incubation. The birds became very tame, showing no uneasiness when the children of the house visited their nest and fed their young. After a short time, however, a most

remarkable change occurred in the Blackbird's demeanour, for he became very jealous of the attention of his partner to his young, and eventually expelled her from the vicinity of the nest. He still continued, however, to show the most devoted affection to his progeny, feeding them with the greatest attention. Unfortunately I had not an opportunity of seeing the female Thrush, as her eviction had taken place previous to my visits; but that the foster-mother was none other than *Turdus musicus* is vouched for by the owner of the garden, who is a careful and accurate observer of Nature, as well as by his brother, by his children, who are unusually bright intelligent boys, and by the nursery maid—all of whom had frequent opportunities of observing the Thrush on the nest. It has been asserted that the Blackbird and Song Thrush occasionally interbreed in a wild state; but, so far as I am aware, no conclusive proof of their doing so has yet been obtained. In support of this assertion, the case I have just related is, I think, an interesting one, and I shall be glad to know if the experience of any of your readers can afford anything by way of corroboration.—
J. K. DOBBIER (13, Leamington Terrace, Edinburgh).

Protection of Birds.—The committee of the Norfolk and Norwich Naturalists' Society are very desirous of bringing under the notice of land-owners and agriculturists the great desirability of affording more efficient protection to useful birds, particularly those which, as destroyers of vermin and injurious insects, render immense service to the farmer and the community at large. Frequent comments and letters have recently appeared in the public journals as to the disastrous effects resulting from the indiscriminate slaughter of many useful species, not only in this country, but also on the Continent, and it is hoped that the publicity given and the attention drawn to the subject will lead to a more judicious course of action. The importance of this matter, in view of the great devastation caused by the plague of field voles (mice) in some parts of Scotland, and past experiences in Lincolnshire, cannot be overlooked, and the opinions of the Scotch farmers in the districts affected, quoted from the Reports to the Board of Agriculture, point to the folly of destroying owls, hawks, and weasels. The Barn Owl, a true farmers' friend, is much persecuted, but a more useful bird, as a destroyer of vermin, does not exist. It has been computed, by competent observers, that when it has young, it will bring a mouse to its nest every twelve or fifteen minutes, and as many as twenty good-sized rats, perfectly fresh, have been counted in a single nest. A recent communication to the daily papers states that a nest containing five young ones, being taken and placed under a hen-coop about a mile distant, no less than twenty-four rats, large and small, brought there by the parent birds, were found lying outside the coop the following morning. The owlets were at once returned to the place from whence they were taken. The Kestrel

Hawk, a great killer of mice, is another bird which merits protection, and it is much to be desired that game-preservers would give their keepers stringent orders not to molest it. It is greatly to be wished that some steps could be taken by those who have the control of the rivers and waterways of Norfolk to check the cruel and dangerous practice of shooting Swallows and Martins, which has of late become so frequent in this county, more especially in the neighbourhood of Norwich. To such an extent is the destruction of our native birds carried on, that it is not improbable further legislation in the matter will be called for, and it is to be hoped the Board of Agriculture will continue to prosecute their inquiries into the pecuniary loss accruing from such destruction. My committee earnestly trust that all lovers of Nature will, by their own example and influence with others, not only extend their protection to these our feathered friends, but will also do their best (in accordance with one of the fundamental objects of this Society) to aid in "the circulation of information which may dispel prejudices leading to their destruction."—W. A. NICHOLSON, Hon. Sec. Norfolk and Norwich Naturalists' Society.

REPTILES.

Palmated Newt in Anglesea.—When shell-collecting last May I found this species in ditches, near the coast, in two places, about three miles apart, between Ty-croes and Valley. I got two males in each ditch, but failed to bring up a single female in my dredge. — CHAS. OLDHAM (Ashton-on-Mersey).

The Black Viper of Markwick.—I send you an extract from one of Markwick's MSS. (p. 195), which are in the possession of Mrs. Eversfield, of Denne Park, Horsham, and to which reference has been already made in 'The Zoologist' (1890, pp. 335, 379). It relates to a so-called "Black Viper" killed by him at Catsfield, near Battle, Sussex. I can find no mention anywhere of the additional poison-fangs in the Viper as described by him, and his remarks may perhaps lead some modern herpetologist to investigate the matter and report the result. My own viper-catching days are long past, I am sorry to say:—

"Catsfield, Oct. 10, 1780.

"THE BLACK VIPER, *Coluber prester*.

Synonyma.—*Coluber prester*, scutis abdominalibus 153, squamis caudalibus 32. Linn. Faun. Suec. p. 104, n. 287; Syst. Nat. ii. t. 377, n. 185. English Black Adder, *Vipera Anglica nigricans*, Pet. Mus. p. 17, n. 104. *Coluber prester*, Black Viper, Berk. Nat. Hist. i. p. p. 57, n. 2.

Description.—On the 19th of August, 1770, I killed a large female Viper with young ones in her that were alive; she was all over black except the extremity of the tail, which was of a yellowish colour underneath, and the blotches, or large spots (as in other Vipers) were of

somewhat deeper black, so as to be discernible from the rest of the body. I at that time thought it was only an accidental variety of the Common Viper, with respect to colour, but Mr. Berkenhout, in his 'Outlines of Natural History of Great Britain,' describes the Black Viper as a distinct species, under the name of *Coluber prester*, and says it is entirely black, tail very short, scutæ 153, scales 32. Exceedingly poisonous. On the 4th of September, 1794, another of these creatures was killed, from which I made a drawing, and the following remarks. Its length from the nose to the tip of the tail was 21 inches and a half, and in the thickest part its size was somewhat larger than a man's thumb. Its colour was exactly the same as in the foregoing. Its tail was very short, being only about two inches in length, and furnished with 32 squamæ or scales, as described by Linnæus; the abdominal scutæ were about 150, as near as I could count them. On one side of the upper jaw I discovered a long sharp-pointed tooth, or fang, with two shorter ones close to it on each side, as represented in the margin, and, tho' I failed to discover it, make no doubt but there was the same apparatus on the other side. If I was not deceived (and I think I was not) in the appearance of this creature's poison-fang being assisted by two other shorter ones (as I have represented), and the Common Viper, *Coluber berus*, has only one poison-fang on each side of its upper jaw, it may account for the bite of this creature being more dangerous, and also remove all doubt with respect to its being a distinct species."

If not an individual malformation, it would surely be sufficient to constitute the reptile in question a distinct species from *Vipera berus*. I think it is quite worthy of investigation, and you may possibly think the extract worthy of insertion in 'The Zoologist.'—WILLIAM BORRER (Cowfold, Horsham).

INSECTS.

Abundance of *Cynthia cardui* in South Hants.—It may be interesting to some readers of 'The Zoologist' to know that the Painted Lady, *Cynthia cardui*, is extremely abundant in the Fareham district of South Hants. I noticed, first of all, about six of these butterflies at Portchester on May 25th. Since then the numbers have been increasing. On enquiring, I find that they are very common throughout this neighbourhood. May 25th is considered rather an early date for the appearance of this species, as the perfect insect usually appears in June.—ALEC GOLDNEY HEADLEY (Portchester).

The Mangel Wurzel Fly.—We are indebted to the Secretary of the Board of Agriculture for the following:—"The Board of Agriculture are receiving complaints of a somewhat extensive attack of the Mangel Wurzel Fly. A leaflet describing the insect and suggesting possible remedies will be issued immediately. Meantime it may be useful to remind growers of

mangels that dressings of nitrate of soda and common salt will force the growth of the plants, and that paraffin mixed with soft soap and water and put on with a powerful distributing machine would be efficacious in making the leaves distasteful to the insects, and prevent the maggots hatched afterwards from attacking them. The eggs can be seen under the leaves in infested fields."

Plague of *Tortrix viridana* in North Wales.—The oak woods of this district are again suffering from a very serious attack of the caterpillars of *Tortrix viridana*. Some of the largest woods have almost the appearance they present in winter, the brown branches of the oaks showing up in greater contrast by the presence here and there of a tree of some other species in full foliage. Though most of the insect-eating birds greedily devour this moth in its perfect state, I have noticed very few birds feeding on the caterpillars. The Chaffinch and the Great and Blue Titmouse, however, apparently do so. The moths are also largely eaten by two species of Bat which take them chiefly from the leaves and branches—namely, the Long-eared Bat and the Whiskered Bat, *V. mystacinus*.—G. H. CATON HAIGH (Aber-iâ, Penrhyndeudraeth, Merionethshire).

The Mustard Beetle.—At the last meeting of the Linnean Society, held on June 16th, Mr. F. Enoch exhibited a large number of specimens of this destructive little beetle, and gave an account of a visit which he had recently paid to a field of mustard which had been attacked near Cambridge. Every plant was more or less affected, the leaves being almost eaten up, and the beetles were everywhere swarming. Walking down a single row of mustard, sixty-five yards in length, he swept off with a butterfly-net enough beetles to fill a glass-jar which he carried with him. On reaching home, he counted a portion and, weighing the remainder, found that he had collected upwards of 15,000. Some idea may therefore be formed of the extent of injury done to the entire field.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 24, Anniversary Meeting.—Prof. STEWART, President, in the chair. Messrs. John Humphreys and Frederick Enoch were admitted Fellows. The Treasurer presented his Annual Report, duly audited, and the Secretary having announced the elections and deaths during the past twelve months, the usual ballot took place for new members of Council, when the following were elected:—Messrs. E. L. Batters, William Carruthers, Herbert Druce,

Spencer Moore, and Dr. D. H. Scott. The President and Officers were re-elected. The Librarian's Report having been read, and certain formal business having been transacted, the President delivered his Annual Address, taking for his subject, "Commensalism and Symbiosis." On the motion of Dr. R. C. A. Prior, seconded by Mr. Jenner Weir, a cordial vote of thanks was accorded to the President for his able address, with a request that he would allow it to be printed.

The Society's Gold Medal was then formally presented to Dr. Alfred Russel Wallace, in recognition of the service rendered by him to zoological science by numerous valuable publications. After Dr. Wallace had replied, the President announced the gift, by Dr. R. C. A. Prior, of an Oxy-hydrogen Lantern for use at the evening meetings, and moved a vote of thanks to him for his valuable donation. This having been carried by acclamation, the proceedings terminated.

June 2.—Prof. STEWART, President, in the chair.

The Vice-Presidents for the year having been nominated by the President, and a vote of thanks to the Officers of the Society having been proposed by Mr. Thomas Christy, seconded by Mr. C. J. Breese, and carried, a ballot took place, when the following were declared to be elected:—Messrs. H. A. James, J. R. Leeson, W. B. Scott, R. H. Wallace, and E. H. Allen.

Mr. H. Bernard exhibited specimens and made remarks on the probably poisonous nature of the hairs and claws of an Arachnid (*Galeodes*).

On behalf of Capt. Douglas Phillott, there was exhibited a curious case of malformation in the beak of an Indian Parrakeet, *Palæornis torquatus*. The upper mandible was so abnormally decurved as to almost penetrate between the rami of the lower mandible, and although the bird was apparently in good health at the time it was shot by Capt. Phillott at Dera Ismail Khan, Pubjab, in March last, it was evident that had it not been killed then, death must have soon ensued from a severance of the trachea by the sharp extremity of the prolonged mandible.

Mr. D. Morris exhibited and made some very instructive remarks on plants yielding Sissal hemp in the Bahamas and Yucatan, and pointed out their distribution and mode of growth. He also exhibited and described the preparation of a gut silk from Formosa and Kiangchow.

Mr. Scott Elliott gave a brief account of a journey he had made to the west coast of Africa, and described the character of the vegetation of the particular region explored, and the plants collected by him.

Mr. Jenner Weir exhibited and made remarks on a species of Psyche.

On behalf of Mr. Ernest Floyer, a paper was read by the Secretary on the disappearance of certain desert plants in Egypt through the agency of the Camel.

Mr. F. Perry Coste gave an abstract of a paper on the chemistry of the colours in insects, chiefly Lepidoptera. The paper was criticised by Prof. Meldola, who was unable to accept the views expressed, the results of the experiments made being, in his opinion, inconclusive.

The meeting was brought to a close by the exhibition of an excellent oxy-hydrogen lantern, recently presented to the Society by Dr. R. C. A. Prior, when Dr. R. B. Sharpe exhibited a number of coloured slides of birds designed to illustrate the interesting subject of mimicry and protective coloration.

The President announced that the last meeting of the session would take place on Thursday, June 16th.

June 16.—Prof. STEWART, President, in the chair.

Mr. J. R. Leeson was admitted and Messrs. T. Cooke, F. J. Clarke, and J. Mellor were elected Fellows of the Society.

Mr. F. Enock exhibited some specimens of the Mustard Beetle, and gave an account of its recent depredations as observed by himself in Cambridge-shire. So numerous was it that in walking down a single row of mustard, a distance of sixty-five yards, he had captured with a butterfly-net upwards of 15,000, as he subsequently ascertained by counting a portion and weighing the remainder. The crop of mustard thus affected he regarded as destroyed.

Mr. R. J. Pocock exhibited and made some remarks upon a species of *Peripatus* (*P. juliformis*), from St. Vincent, of which five specimens had been collected by Mr. H. H. Smith for the Committee investigating the fauna and flora of the Lesser Antilles. The species was originally described so long ago as 1826 by the Rev. L. Guilding (*Zool. Journ.* vol. ii.), but from that time until the present no additional specimens had been procured there. As Guilding's types had been lost, and his descriptions are wanting in detail, this re-discovery was of considerable interest.

Mr. George Murray exhibited and described the type of a new order of Algæ, to which the name *Splachnidium rugosum* was given.

A paper was read by Prof. J. R. Henderson, entitled "Contributions to Indian Carcinology," and embodied an account of several little-known crustaceans, and descriptions of some new species.

Mr. H. B. Guppy read a paper on "the Thames as an agent in plant dispersal," in which several interesting facts were brought out, the observations being illustrated by specimens collected by the author, and a useful record given of the effects of exposure to sea-water, and of freezing upon the germinating power of seeds.

Prof. F. Oliver gave an abstract of observations made by Miss M. F. Ewart on some abnormal developments of the flowers of *Cypripedium*, illustrated by effective diagrams in coloured chalk.

Mr. R. J. Pocock contributed some "Supplementary Notes on the Fauna of the Mergui Archipelago," the result of his examination of some fresh material which had lately come to hand.

The evening was brought to a close by an exhibition by Mr. Carruthers, with the aid of the oxy-hydrogen lantern, of some beautiful slides of sections of fossil plants. A second series (zoological) exhibited by the President, included several minute organisms of extreme interest.

This meeting brought the session of 1892-93 to a close.

ZOOLOGICAL SOCIETY OF LONDON.

May 17.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Mr. W. T. Blanford exhibited and made remarks on the skin of a Wild Camel obtained by Major C. S. Cumberland in Eastern Turkestan.

In a paper "On the Geographical Distribution of the Land Mollusca of the Philippine Islands," the Rev. A. H. Cooke showed that the distribution of the different subgenera of *Cochlostyla* affords an interesting clue to the early relations of the various islands of the Philippine group. Regarded from this point of view, the central islands, Samar, Leyte, Bohol, Cebu, Negros, and Panay, with Luzon, were closely related, while Mindoro and Mindanao were remarkably isolated even from their nearest neighbours. An examination of the intervening seas accounted for these phenomena, the depths between the central islands being inconsiderable, while Mindoro and Mindanao are surrounded by very deep water. The Mollusca of the two ridges between the Philippines and Borneo, formed by Busuanga, Palawan, and Balabac, and by the Sulu Archipelago, were partly Philippine, partly Indo-Malay. Two remarkable groups of *Helix*, peculiar to Mindoro, Busuanga, and Palawan, showed relations with Celebes and possibly with New Guinea. The Mollusca of the Batan, Tular, and Talantse Islands were also discussed. Regarded as a whole, the Land Mollusca of the Philippines were stated to contain:—(1) Indo-Malay, (2) Polynesian, (3) indigenous elements, the first decidedly predominating.

A communication was read from Graf Hans von Berlepsch and Herr J. Stolzmann, containing an account of a collection of birds made by Herr J. Kalinowski in the vicinity of Lima and Ica, in Western Peru. The species of which examples were obtained in these localities were eighty in number. In an Appendix an account of previous authorities on the same subject was added.

Mr. G. A. Boulenger gave an account of *Lucioperca marina*, a rare species of fish, originally described by Pallas from the Black Sea and the Caspian, and little known of late years.

A communication from Mr. Oldfield Thomas, contained a revision of the Antelopes of the genus *Cephalolophus*, of which eighteen species were recognised as valid. A new species was described as *Cephalolophus jentinki*, from Liberia.

Prof. Bell called attention to the remarkable amount of variation presented by *Pontaster tenuispinis*, numerous examples of which he had been enabled to examine and compare. He came to the conclusion that several North Atlantic species, which had been described as distinct, should be regarded as belonging to it.

A communication was read from Mr. H. H. Druce, giving an account of the Butterflies of the family *Lycænidæ*, of the South Pacific Islands. Of thirty-one species mentioned, seven were described as new to science.

June 14.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, 1892, calling special attention to a pair of the rare and beautiful Passerine bird, the Grey Colly-Shrike, *Hypocolius ampelinus*, from Fao, Persian Gulf, presented by Mr. W. D. Cumming. He also made some remarks on the most interesting objects observed during a recent visit to the Zoological Gardens of Rotterdam, the Hague, Amsterdam, and Antwerp.

A communication from Mr. T. D. A. Cockerell, contained particulars of the occurrence of a species of Jacana, *Jacana spinosa*, in Jamaica.

Dr. John Anderson exhibited and made remarks on some specimens of the Mole-Rat, *Spalax typhlus*, from Egypt.

Prof. Romanes gave an account of some results recently obtained from the cross-breeding of Rats and of Rabbits, and showed that it did not follow that a blending of the characters of the parents was the result of crossing two different varieties.

Prof. Howes exhibited and made remarks on some photographs received from Prof. Parker, of Otago, New Zealand, illustrative of Sea-Lions, Penguins, and Albatrosses in their native haunts.

Dr. Dawson made remarks on the Fur-Seal of Alaska, and exhibited a series of photographs illustrating the attitudes and mode of life of these animals.

Mr. Sclater called attention to the habits of a South-African Snake, *Dusypeltis scabra*, as exhibited by an example now in the Society's Gardens. He also read some extracts from a letter addressed to him by Mr. H. H. Johnston, C.B., announcing the despatch of a consignment of Natural-History specimens illustrative of the fauna and flora of the Shiré Highlands.

Mr. W. Saville Kent exhibited and made remarks on some photographs of a species of the genus *Podargus*, showing the strange attitudes of these birds in a living state.

Mr. F. E. Beddard read a paper on the Brain and Muscular Anatomy of *Aulacodus*.

Mr. Gerard W. Butler read a paper on the subdivision of the body-cavity in Snakes, being a continuation of the subject treated of in a memoir on the subdivision of the body-cavity in Lizards, Crocodiles, and Birds, previously read before the Society.

Mr. J. W. Gregory gave an account of his researches on the British Paleogene Bryozoa, of which he recognised thirty species, represented in the National Collection by about 750 specimens.

Mr. Sclater gave an account of a small collection of Birds from Anguilla, West Indies, made by Mr. W. R. Elliott, one of the collectors employed by the Committee for the exploration of the Lesser Antilles.

Prof. G. J. Romanes read a paper on a seemingly new diagnostic character of the primates, which was that the terminal joints of both hands and feet in all species of this order are destitute of hairs. This rule did not apply to the Lemurs.

Mr. O. Thomas read a paper on the genus *Echinops*, of the order Insectivora, with notes on the dentition of the allied genera *Ericulus* and *Centetes*.

Mr. G. A. Boulenger gave an account of the Reptiles and Batrachians collected by Mr. C. Hose on Mount Dulit, North Borneo. Amongst these was a fine new Lizard of the genus *Varanus*, proposed to be called *V. heterophilis*. The two Batrachians were also described as *Rhacophorus dulitensis* and *Nectophryne hosii*.

A paper was read by Lieut.-Col. H. H. Godwin-Austen on new species and new species and varieties of the Land Molluscan genus *Diplommatina*, collected by himself, and more recently by Mr. W. Doherty, in the Naga and Muni-pur Hill ranges. The author described twenty-seven supposed new species, the most remarkable being *D. uicrenata*, with a peculiarly-formed peristome.

A communication was read from Mr. B. B. Woodward on the mode of growth and the structure of the shell in *Velates conoideus*, Lamk., and in other *Neritida*. The mode of growth and the structure of this shell were described as follows:—Up to a certain point the growth is normal; a change in the direction of growth afterwards takes place, and the test is enlarged by the addition of fresh shelly matter on the exterior of the under side and by the removal of previously-formed layers on the inner surface. The internal septum that serves the purpose of a myophore was shown to have originated in the paries, which, in the course of growth, had been replaced by the septum. In this respect *Velates conoideus* epitomised in its life-history conditions which are found in distinct recent species of the closely-allied genus *Neritina*. The relations of the paries and septum in this last genus were also described.

This meeting closed the Session 1891-2.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 1, 1892.—R. McLACHLAN, Esq., F.R.S., Treasurer, in the chair.

The Hon. Walter Rothschild sent for exhibition *Neptis mimetica*, n. s., from Timor, mimicking *Andasena orope*, one of the Euplœidæ, and *Cynthia equicolor*, n. s., a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpinii* and *S. pyri*, and specimens of *Callimorpha dominula*, var. *romanovii*, var. *italica*, and var. *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of Rhopalocera made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked that the various species of *Neptis* were usually protected and imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among the butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen, and others continued the discussion.

Mons. A. Wailly exhibited about fifty species of Australian Lepidoptera, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of Lepidopterous ova.

Mr. F. Merrifield exhibited a series of *Drepana fulcatoria*, half of which had been exposed for a week or two, in March or April, to a temperature of about 77°, and the other half had been allowed to emerge at the natural out-door temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir, and others took part in the discussion which followed.

Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh.

Canon Fowler exhibited the egg-case of a species of Mantidæ from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire.

Mr. McLachlan called attention to the re-appearance in large numbers of the Diamond-back Moth, *Plutella cruciferarum*, which was very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated.

Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias edusa* in different localities near London.

Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other Vanessidæ.

The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacraa*.—W. W. FOWLER, Hon. Sec.

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ON A BLACK VARIETY OF THE WATER VOLE, *ARVICOLA AMPHIBIUS*.

BY H. A. MACPHERSON AND O. V. APLIN.

THE scope of the present paper is limited to an attempt to trace, however imperfectly, the distribution in Great Britain of the black variety of the Water Vole. This form of *Arvicola amphibius* has long been known, and has been recognised by continental naturalists, including Pallas, who found it in Siberia; but it was first brought into notice in Great Britain by William Macgillivray, in a paper entitled "Description of a species of *Arvicola* common in Aberdeenshire," read before the Wernerian Society on May 1st, 1830. On that occasion Macgillivray claimed specific rank for this variety, on the strength of "having seen several hundred individuals, and handled at least a dozen."* At a later date he abandoned this position, stating:—"At one time I felt pretty confident that this Black Water Rat is specifically distinct from the common or brown kind; and even now I do not consider it impossible that it may be so, but the form, structure, proportions, and pile are so similar, and the skeletons present so little difference, that until better distinctions than I can point out are obtained, it may be as well to consider it merely as a variety."†

Accepting Macgillivray's later views as agreeing most closely with those of modern zoologists, we may proceed to detail

* Mem. Wern. N. H. S. vi. p. 425.

† Nat. Libr. xiii. p. 263-5.

the facts of the distribution of this *Arvicola*. The references to Scotland are placed under the "Faunal Areas," now universally accepted among Scottish naturalists, while the records relating to England are inserted under the headings of their respective counties.

Although Macgillivray wrote of it as confined (in Britain) to Scotland, it was afterwards recorded by the Rev. L. Jenyns from the fen ditches of Cambridgeshire, as well as by Lubbock from Norfolk. The fact of its inhabiting these widely separated localities induced us to think that its presence might be detected elsewhere in Great Britain. At all events, the peculiarities of its range, as previously recorded, seem to deserve further attention. Accordingly we embarked on an extensive correspondence with the naturalists of Great Britain, with a view to ascertain in what districts the black variety of the Water Vole has been found. Aplin also asked, through the columns of 'The Field,' for the co-operation of those students of the British Vertebrate Fauna with whose names we were not acquainted. This correspondence has resulted in a considerable amount of information coming into our hands. This information, together with that which we have gleaned from published records and accounts of this animal, we now have the pleasure of laying before the readers of 'The Zoologist.' While tendering our sincere and grateful thanks to the correspondents who so kindly responded to our request for information, we feel that some apology is due on account of the delay in the appearance of this paper. This is due to the fact that Macpherson, having undertaken the task of searching the Scottish literature on the subject, was unfortunate enough to lose his first transcripts, and was therefore obliged to wait many months before another opportunity arrived of his working again over even a portion of the same ground. We should like to add that we hope other field naturalists will come forward and record their experiences of the distribution of this variety.

It will be seen, from the statistics thus furnished, that this melanotic variety is rare in England, occurring sporadically in many districts widely distant from one another, but only well established in the fen country of Norfolk and Cambridgeshire. On entering Scotland, it appears to be very local until we reach the Trossachs in the west, and the watershed of the Tay on the east coast; north of which it occurs almost as generally as the familiar brown form.

I. SCOTLAND.

(1). TWEED AREA.—A few records of this species occurring sporadically on the Berwickshire streams are scattered through the ‘Proceedings of the Berwickshire Naturalists’ Club,’ 1874–76; judging from which, the black variety appears to be extremely local in this area.

(2). FORTH AREA.—Prof. Duns, D.D., states in his paper “On the Habits of the Water Vole”:—“I do not know of any instance of the black variety (*Arvicola ater*, Macgillivray) ever having been met with at any considerable distance from the water. It is more rare than that now under notice [the brown form], though it is described as abundant at Aberdeen (Wernerian Memoirs, *loc. cit.*), and [the late] Mr. [R.] Gray, our secretary informs me *it was very plentiful near Dunbar some years ago.*”*

(3). TAY AREA.—In his paper on the Mammalia of North-West Perthshire, Mr. W. Horn says, “Both varieties of this species [are] extremely abundant along the banks of the Tay, Tummel and other streams and burns.”† Mr. J. G. Millais informs Macpherson, “In Perthshire there is an equal number of both the brown and the black, which I believe breed occasionally with one another, as I have seen a specimen of an intermediate colour.” Mr. J. A. G. Drummond Hay writes in reply to Aplin’s letter in ‘The Field’:—“I have often seen it in the Carse of Gowrie (the stretch of alluvial land between Perth and Dundee); there is hardly a stream or ditch there in which I have not observed them at various times when fishing, though of late they have become much less common than they used to be. A very fine specimen (buck) was killed by a terrier in the ‘Pow’ near Glencarse station in February, I think, of this year, and has been, I believe, preserved for the Museum of the Perthshire Natural History Society” (*in litt.* June 30th, 1890). In the Crieff district, Macpherson was personally assured of the common occurrence of the black form by those well acquainted with it.

(4). DEE AREA.—Macgillivray stated, as early as 1830, that this variety was “very common in many parts of the counties of Aberdeen and Banff.”‡ We must apparently refer, for his latest

* Proc. Roy. Phys. Soc. v. 1878–80, p. 355.

† Proc. N. H. Soc. Glasg. v. p. 123.

‡ Mem. Wern. N. H. Soc. vi. p. 424.

views on the subject, to his 'Natural History of Dee Side and Braemar,' posthumously published in 1855:—" *Hypudæus ater*. Black Vole. Black Dog or Water Dog. Generally distributed, but local; not frequent along the Dee; mostly on grassy banks of the larger tributaries; pretty numerous in Braemar, in several places along the Dee and the Clunie."*

(5). MORAY FIRTH.—"In the deer forest of Gaik, in Inverness-shire, which I rented and occupied from 1863 to 1871, these animals were then very common on all the burns of the upper ground; the common form was also frequent, but did not, so far as I could discover, frequent the high plateaux of the forest" (Lord Lilford, *in litt.* May 16th, 1891). Mr. J. G. Millais writes:—"The Black Water Vole is found all over Inverness-shire and Ross-shire in the streams and ditches, though it is but sparingly distributed. In these counties I have never seen any *but* this variety." Mr. E. W. H. Blagg writes:—"I have a [black] specimen in my collection, which I received from Elgin, May, 1886; I think from Mr. Dunbar Brander."

(6). SUTHERLAND AND CAITHNESS.—Messrs. Harvie Brown and Buckley furnish an extended note regarding Sutherland, and one which is too interesting to be passed over here, especially as the work from which it is taken is out of print and already rare:—"The black variety is, in our opinion, more abundant than the brown in the west, and is at least equally common in the east, where it haunts every burn except those that are too rocky. This interesting species appears to thrive well amongst the rocky limestone formation, finding ready shelter in the innumerable cracks and passages through the rock, but we have not met with it in the very rocky burns of other formations. Mr. Ben. N. Peach observed the black variety commonly in Durness."† The same authors state regarding Caithness:—"Until lately Mr. Wm. Reid believed there was only the *brown* variety; but a young angler, when out fishing in a small feeder of the Wick river, came upon a number of black ones, some of which he killed, and he gave Mr. Reid the skin of one. A part of this skin sent by Mr. Reid for our inspection does not appear quite so black as many others we have examined, but is much blacker than the

* 'Fauna of Braemar,' p. 387.

† 'Fauna of Sutherland and Caithness,' p. 92.

pure brown variety."* Macpherson is indebted to Mr. James Sutherland, of Wick, for a specimen which he killed on a burn in his own neighbourhood in April, 1890. This specimen is of a deep black, and thoroughly typical of the variety which it represents. Mr. Sutherland states that Black Voles are quite common about Wick.

(7). ORKNEY AND SHETLAND.—Provost Peace, of Kirkwall, assures Macpherson that the Water Vole is absent from the Orcades. The species is mentioned by Messrs. Buckley and Harvie Brown in the following observation:—"In reference to the Water Vole said by Messrs. Baikie and Heddle to have been taken at Rackwick in 1844, Mr. Moodie-Heddle writes us that he has never seen the species in Hoy. We ourselves never came across a specimen, and so for the present we think it better to keep the note in brackets."† There is no information as to the existence of this Vole in any of the Shetland Isles, from which its absence may safely be inferred.

(8). WEST ROSS AND SKYE.—The head-keeper at Sconser and other persons well acquainted with West Ross have assured Macpherson that the black variety of the Water Vole occurs not uncommonly in Gairloch and other parts of the mainland. It is believed to have once occurred in Skye, near Broadford.

(9). OUTER HEBRIDES.—The Water Vole has not been detected hitherto in the islands of this group.

(10). ARGYLL.—The only allusion to the occurrence of this Vole in "Argyll" occurs in the paper by Prof. Duns already noticed, in which he remarks of the black variety, "I have seen it only twice; in both cases in localities widely separated in the neighbourhood of Oban."‡

(11). CLYDE.—Thompson was apparently the first to record this variety from the Clyde faunal area. "The black variety (*A. ater*, Macgillivray)," he writes, "taken at Ballantrae, Ayrshire, was sent to me by my friend Mr. John Sinclair, in August, 1842. It was found dead on the highway; and another was taken about the same time in a mole-trap—contents of stomach, vegetable matter only. From the last-named locality Mr.

* 'Fauna of Sutherland and Caithness,' p. 92.

† 'A Vertebrate Fauna of the Orkney Isles,' p. 85.

‡ Proc. Roy. Phys. Soc. v. 1878—80, p. 355.

Sinclair also sent me the ordinary animal, which is much more common.* The only form which Macpherson has been able to procure from the banks of the Clyde is the common brown animal, but Mr. J. M. Campbell has incidentally alluded to the occurrence of the black form; while Mr. James Lumsden states (in a paper entitled "The Mammals of the Neighbourhood of Loch Lomond"), "Both the brown and black varieties of this species are common on the banks of the streams and rivers of our neighbourhood, and on some of the islands of the loch."†

SCOTTISH SOLWAY.—Mr. R. Service writes to Macpherson that "The black variety of the Water Vole is very frequently found throughout this district. It might almost be said to occur in family parties. At all events, I once got three of them out of one potato-pit. On another occasion I got an old female and a half-grown young one together that may have been parent and offspring." Mr. A. Buchan-Hepburn writes to Aplin (Jan. 9th, 1891):—"Noting your enquiry in 'The Field' *re* Black Water Vole, I may state that it is fairly common in some of the open drains on the property of my brother-in-law, Mr. James McDonall, of Logan, Wigtonshire. The exact locality is about twelve miles from the Mull of Galloway. The Black Water Voles make charming pets: my nephews have kept them on several occasions."

II. ENGLAND.

As regards England, evidence of the existence of this variety is less satisfactory.

NORTHUMBERLAND.—Not reported by several local naturalists with whom we have conversed.

DURHAM.—Not reported to us.

CUMBERLAND.—Reported once to have been taken near Whitehaven, but this is doubtful. Mr. Tremble once killed a black specimen on Burgh Marsh; and Mr. H. Leavers saw a coal-black Water Vole on the Eden in June, 1891. These are the only authenticated specimens, though search for the black variety has been made for some years.

WESTMORELAND.—Mr. W. E. Beckwith reports that this variety is found in the neighbourhood of Windermere. His experience

* 'Natural History of Ireland,' vol. iv. p. 13.

† Proc. Nat. Hist. Soc. Glasgow, iii. p. 190.

at present remains unique, but there is a rumour that this form has occurred near Kendal.

YORKSHIRE.—Mr. W. D. Roebuck says:—"The black variety occurs in a few localities."*

LANCASHIRE.—Macpherson has seen plenty of Water Voles in the north of Lancashire, but all were brown ones.

CHESHIRE.—Mr. King, of Carlisle, informs Macpherson that he once came across a colony of Black Water Voles on the banks of the Cheshire Dee. Mr. Edward Comber sent for Aplin's inspection the skin and skull of a Black Water Vole, which he captured in the winter of 1881-2, close to the village of Parkgate on the Dee, hundred of Wirrall. Although living there ever since, he has never met with another; but a friend informed him, on May 15th, 1890, that he had seen a Black Vole in a pond about two miles from where the above-mentioned specimen was obtained (*in litt.* May 6th and 14th, 1890).

WARWICKSHIRE.—Aplin has never met with it in those parts of the southern half of the county with which he is acquainted.

BUCKINGHAMSHIRE.—Aplin has been unable to hear or see anything of this form in west and south Bucks.

OXFORDSHIRE.—Aplin has once or twice seen very dark-looking Voles on the banks of the North Oxfordshire streams, where the brown form is very numerous, but he is not aware that the black variety has ever been actually obtained in the county. Mr. C. M. Prior, however, informed him some years ago that he saw a Black Vole on the banks of the Sorbrook near Bodicote in August, 1875. The Rev. A. Matthews never met with it about Weston-on-the-Green (*in litt.*), nor has Mr. W. H. Warner ever seen it at Standlake, or in the low-lying country on the banks of the upper Isis.

GLOUCESTERSHIRE.—Mr. H. W. Marsden has made enquiries which, together with those made by ourselves, go to prove the absence of the black form from this county.

BERKSHIRE.—Mr. Warner has not met with it at Fyfield, near Abingdon, nor on the northern borders of the county along the upper Isis. Enquiries made by Aplin in South Berkshire resulted in his not being able to hear anything of it in the Kennet valley.

* 'Vertebrate Fauna of Yorkshire,' p. 14.

WILTSHIRE.—The Rev. A. P. Morres writes from the neighbourhood of Salisbury that he has only noticed the brown form:—“They vary rather in colour, but I have never come across a really black one.”

HERTFORDSHIRE.—Macpherson resided chiefly in Herts from 1869 to 1876, during which period he saw a yellow and a white variety of the Water Rat, but never came across a black specimen. Mr. M. Vaughan shares in his belief in the absence of this form.

SURREY.—Our correspondents only report the brown form, and Macpherson has spent many weeks in Surrey without seeing any other.

SHROPSHIRE.—Mr. Beckwith writes from Shrewsbury:—“The Black Water Rat is a local form here. I have always thought it rather more common about pools than by streams. Round the Ellesmere meres I have often seen it, but not on the Severn.”

STAFFORDSHIRE.—Mr. E. W. H. Blagg writes to say that his local evidence is “entirely of a negative character. He has never met with, heard of, or read of, the black form in this county.”

LINCOLNSHIRE.—Mr. H. F. Allison has “never come across the black form of the Water Rat, either along the Witham bank in this part of the county or in the marsh district between Louth and the sea.” Mr. G. H. Caton Haigh writes:—“In North-Eastern Lincolnshire—where from the nature of the country the common variety of the Water Rat is very abundant—I some few years ago made many enquiries from keepers, rat-catchers, and men employed on the drains, with a view to ascertain whether the black race ever occurred, but in every case without result; and as I never met with it myself, I think I may safely say that it is absent from that district.” But the Black Water Vole occurs in some parts of this county, for Mr. Cordeaux writes:—“In North Lincolnshire it is not uncommon in the neighbourhood of the river Ancholme near Brigg, and it has been reported to me as seen in one or two other localities. I think all I can report about it is ‘local, but rare.’” Mr. W. Hopwood reports that on April 20th, 1890, he shot a distinctly black Water Vole at South Thoresby, a village about nine miles south [north?] of Louth. In the summer of 1874 a black Water Vole was observed by Mr. C. M. Prior near Horn-castle.

NORTHAMPTONSHIRE.—Lord Lilford, writing May 16th, 1890, remarks, “I only once heard of a Black Water Vole in this neighbourhood, and have very great doubts as to the correctness of the report.”

NOTTINGHAMSHIRE.—Brown Voles are common in the little stream which flows along the bottom of the deer paddock at Rainworth, near Mansfield, but Mr. Whitaker pointed out to Aplin the exact spot where he once saw a black one sitting on the bank a few years ago. Mr. F. B. Whitlock, of Beeston, near Nottingham, writes:—“I have occasionally met with the black variety of the Water Vole on an island in the Trent, about a mile from here. Curiously enough, I cannot remember seeing a full-grown specimen, those that I have seen—and on one occasion shot—having been about half-matured. They are not of a deep black, but something of a mole-colour. The difference from the ordinary variety is very conspicuous.”

HUNTINGDONSHIRE.—Macpherson found a small specimen in the Natural History Museum, London, labelled Huntingdonshire, presented by Mr. W. W. Warner, in 1889.

CAMBRIDGESHIRE.—Mr. A. Moore Laws reports the existence of Black Water Voles near Thetford. A man named Fenn was paid to send some specimens to Macpherson from Soham, but he never fulfilled his contract. Mr. W. Borrer writes, “I have one specimen which I shot in Cow Fen, just behind Peterhouse, in April, 1837. It was then very abundant there, as also about Clayhythe, down the river from Cambridge. You do not, however, require information about these, and I have never seen the variety anywhere else.” The Rev. Leonard Jenyns (then of Swaffham Bulbeck, Cambridgeshire) wrote in 1846:—“We have an animal frequenting the fen-ditches of Cambridgeshire, and not very unfrequent, which the people sometimes call the ‘Water Mole.’ This is nothing more than a black variety of the common Water Rat, the fur of which is sometimes of as deep and velvety a hue as in the Mole; but every gradation of tint may be found in different individuals between this uniform rich black and the reddish brown which more ordinarily prevails. There is no other difference whatever, besides colour, between these two kinds of Water Rat, though the black has been considered by some as a distinct species. On the 15th of June, 1830, I had a very large female of the black sort brought to me, which had been killed in

the next village; it was gravid at the time, and, on opening it, I found eight young within, perfectly formed, and apparently quite ready for exclusion. I once at Ely found a small specimen of this black variety, measuring not quite five inches from the nose to the root of the tail, lying dead on the ground beneath the nest of a White Owl."* Mr. Jenyns thought that Jesse's "sort of Vole, which partook very much of the appearance of a Rat" ('Gleanings,' 2nd series, p. 27) was doubtless referable to the black variety of the Water Vole.

NORFOLK.—Mr. T. Southwell communicated the following facts to 'The Zoologist' (1890, p. 216):—"By no means infrequent in Norfolk. I have seen many entirely black specimens, but never remember to have met with any individuals intermediate between this and the normal colours. The late Mr. Lubbock was quite of opinion that this variety, as I believe it is rightly regarded, was entitled to specific distinction. He says, in an unpublished note, which I have quoted in the second edition of his 'Fauna of Norfolk' (p. 10, note):—"I have examined many of these animals when dead, and have watched their habits when alive, and I must believe that the difference in colour in this case arises from diversity of species. The brown are *considerably* the largest; and in the spring, when they may be seen often in pairs, I have never observed a brown and a black one together, but the colours always correspondent. At that season they may frequently be seen feeding close together at the entrance of their hole, and examined at the distance of a few yards.' Prof. Newton told me that the black-furred one was the only form of the animal which he used to meet with at Elvedon, near Thetford. . . . The black variety of *A. agrestis*, referred to by Mr. Aplin, was sent to be preserved by Mr. Gunn, at whose shop I saw it, and it was a beautiful little animal, pure black." This was a variety of *A. agrestis* analogous to the var. *ater* of *amphibius*, referred to by Aplin in a note on varieties of *A. amphibius* (Zool. 1890, p. 179). Mr. J. H. Gurney, in 'The Zoologist,' 1876 (p. 5177), reported that an adult Water Vole was trapped at Keswick, near Norwich, in which the entire fur was of a deep black, but with a slight silvery reflection on some of the largest hairs of the back.

SUFFOLK.—Mr. G. T. Rope writes that neither his brother nor

* 'Observations in Natural History,' p. 76.

himself have ever come across a black Water Vole in Suffolk, though expending much time in studying the habits of this small quadruped. Mr. F. Kerry writes:—"A friend of mine (who has been with me trying to find the black form) tells me that he used to find it on the Barsham Marshes, in Suffolk, that it was not so large as the brown form, and had a shorter tail." The Rev. Julian G. Tuck writes from Tostock Rectory, Bury St. Edmunds, "I do not think we have this variety here; last winter (1892) I shot one on the ice which looked very black, but it was only a common one."

ESSEX.—Dr. Laver and Mr. Kerry both assure us that the brown form is the only one found, to their knowledge, in Essex. Mr. Kerry most obligingly forwarded what he considered a typical specimen. Mr. Miller Christy writes:—"All I can say is that I can't prove its non-occurrence, as it is proverbially difficult to prove a negative; but I have never seen it myself, nor have I any note of its having ever occurred in the county; nor have I ever seen it personally elsewhere."

KENT.—Mr. E. Bartlett informed Macpherson last year that he had never met with this variety near Maidstone. Neither has Macpherson himself, though fairly acquainted with this and other southern counties. But Mr. Charles Gordon says that black Water Voles do exist in Kent—*i.e.* in Gavington Marsh, near Littlebourn—and he is disposed to think that they frequent the banks of the Stour. He adds that this melanotic form does not occur near Dover.

SUSSEX.—Mr. W. Borrer, of Cowfold, near Horsham, informs us that he has not met with it in his neighbourhood; but we learn from Mr. Harting that the late Mr. William Jeffery, of Ratham, near Chichester, a frequent correspondent at one time to 'The Zoologist,' obtained two or three at different times on the mill-stream near Bosham. [See Zool. 1865, p. 9706, and 1876, p. 5177.—ED.]

HAMPSHIRE.—Mr. G. B. Corbin writes:—"I had never seen the form myself, so have made enquiries of several persons whose knowledge of both the Avon and the Stour would place them in a position at least to give an opinion, but I can obtain no single instance of the black form having been seen near here (Ringwood)." The Rev. J. E. Kelsall writes that he has never met with the black form near Fareham, and the extensive enquiries

which he kindly made throughout the county resulted in his being unable to hear of its occurrence anywhere in Hampshire. Mr. E. Hart, of Christchurch, also writes that he has never met with this form in a live state.

DORSET.—The Rev. F. O. Pickard-Cambridge met with no specimens of the black form of this Vole during a prolonged residence in Dorset.

SOMERSET.—The Rev. Murray A. Mathew writes:—"I have seen them in several places in this county; in my old parish, Bishop's Lydeard (West Somerset), and at Wrington, in East Somerset."

DEVON.—Mr. A. Mitchell writes that he has failed to detect the black form of the Water Vole in Devon; and Mr. Pidsley has been unable to discover anything about it in this county.

CORNWALL.—Mr. Thomas Cornish writes from Penzance, "The black variety of the Water Vole has never been observed in this district, or indeed, I may say, in all Cornwall."

III. WALES.

The discovery of the Black Water Vole in North Wales is probably only a matter of time, since it has been recorded from Cheshire and Shropshire. But at present the Welsh information relating to it which has come into our hands is limited to one instance of its occurrence in the southern part of the principality.

Mr. G. H. Caton Haigh writes of MERIONETHSHIRE:—"In this county, though a few Water Rats are to be seen on most of our rivers and marshes, the species is not abundant; and though I have made no special effort to obtain the black variety, I have always been on the look out for it myself, and I do not think it would have escaped my notice had it existed here, as between wildfowl shooting and fishing I am continually in the haunts of the species"; and Mr. F. C. Rawlings, of Barmouth, says:—"I have never noticed any variation from the ordinary brownish grey. They are fairly numerous along the railway-gutters and on the marsh, but cannot be called very common." Mr. Caton Haigh's remarks apply to the adjoining portion of CARNARVONSHIRE. The Rev. Murray A. Mathew writes:—"I never saw any in PEMBROKESHIRE; but this is no evidence against their existence there." He lived near Wolfscastle. Mr. E. C. Phillips, as the result of many enquiries kindly instituted in BRECON and of his

own observations, considers that the Water Vole, in any form, is not common in that county. He adds, "I have only met with one instance of the black variety, and that was seen by a doctor near Talgarth; it was taking bits off the roots of a water-plant and swimming with them to the bank." The comparative scarcity of the common form both in North and South Wales is interesting when considered in connection with the absence of the genus *Arvicola* from Ireland.

A RECENT VISIT TO THE FARNE ISLANDS.

BY JOHN CORDEAUX.

THE "Fern," "Farn," or "Farne" Islands, as they are usually called, are a scattered group of rocky islets, naked and wind-swept, situated south-east of Bamborough, on the Northumberland coast, and distant from the mainland from two to five miles, which latter distance will cover the Longstone, the most easterly of the Outer group.

Strictly speaking, there are two distinct clusters of islands in "Farneland," by which name it was known to the Saxons; these are separated by a strait rather more than a mile wide, and with a considerable depth of water, called the Oxscar road or Staple sound. The Outer Farnes consist of the Longstone (on which is the lighthouse), the Harcar rocks, Great and Little Wamses, Brownsman, Staple Island, and the Pinnacles, Nivestone and Crumstone—the latter *par excellence* the haunt of the Seals which frequent the islands. The Inner group consists of Farne Island proper, with an area of sixteen acres, sometimes called the House Island, and containing many interesting remains of ancient buildings—the Wedums, corrupted into "Wide-opens"—the two Noxes, which are north of the Wedums, and the Scarcar rock east of these—the Megstone, at the extreme north of the Farne; this latter is the nesting haunt of the Common Cormorant, the part they most frequent being conspicuous from a great distance by its lime-washed appearance. The number of islets in the two groups varies from fifteen to twenty-five, for at low-water or half-tide some become united, and it is quite possible to walk dry-shod over the occasionally submerged rocks from one to another.

Notwithstanding their small size and comparative obscurity, these storm-vexed rocks in a setting of grey sea, and running parallel with the bleak inhospitable coast of Northumbria, have in themselves a remarkable history, for from the middle of the seventh century to the dissolution of the monasteries in 1536 they were the chosen residence and retreat of bishops, monks, and recluses more or less connected in their lives with the ancient church of Lindisfarne. Here on the chief island for many years lived the saintly Aidan; and later, stern St. Cuthbert, and subsequently many another worthy—the ancient Fathers of the early Christian Church.

Here was preserved, in ages of darkness, ignorance, and almost constant strife, all that was best worth treasuring of the early history of our national existence. Within the circle of those dark basaltic crags was born that spiritual force and energy which in time subdued and held beneath its beneficent sway a barbarous and cruel race, spreading the light of truth and civilization through the length and breadth of heathen Northumbria. There is perhaps no other district in the United Kingdom to which we may turn with greater interest than to ancient Bamboroughshire and its attendant islets. The whole of the district is rich in historical tradition and lore, and there is a constant and ever-varying change of beautiful scenery to be found, both wild and cultivated, within its bounds.

At the present day the chief interest of the Farne Islands, more especially to the naturalist, is the presence of countless thousands of sea-birds which assemble there in the nesting season. These barren rocks are the summer home of those wild wandering children of ocean which at other seasons are found scattered over hundreds of miles of the northern seas. Thanks to the exertions of an Association of Ornithologists and others who now lease the islands, the birds are well cared for and protected, so that it is now a pleasure to visit and study them in their haunts, conscious of the fact that they are not doomed to speedy extinction by the importation of boat-loads of ill-conducted and greedy excursionists from the Tees and Tyne. So great, we are assured, had become the depredations, that had it not been for the timely interference of the Association, the birds nesting on the Farne Islands would have before this been exterminated.

A desire to see the bird-nurseries under the beneficent rule of

the Association, and compare them with what we remember in former years, induced us recently to visit the Farnes, and the following observations and remarks are the result of a very pleasant and long-to-be-remembered day.

It was a lovely morning in June, with a smooth sea and light westerly breeze, when we stepped into our boat in the quaint and picturesque harbour of Sea-houses, North Sunderland. Our party consisted of three adults and three boys, with four boatmen; the skipper himself, Mr. Cuthbertson, the very mention of whose name is suggestive of the Farnes and everything relating to them—fisherman, boatman, pilot, naturalist, sportsman, and, not the least, guide—let those who visit the islands first secure his services, and they will not return disappointed.

Within an oar's length of the boat, as we embark at the harbour steps, some Arctic Terns and a Kittiwake were beating to and fro, now one and then another stooping to take some small object from the water. Both are lovely to look upon, but the latter seems to us the incarnation of all bird loveliness in its pure white underparts, in contrast with the pale slaty-grey of mantle and black-tipped wings, lemon beak, and dusky feet, now tucked close to the body, but in its swoop pushed downwards as if to press the surface of the water—water so clear and free from impurities, that each feature of the bright aerial creature is doubled as in a mirror.

Just outside the harbour one of our boys exclaimed, "Look, a Black Guillemot!" and sure, although at first we doubted, so it was—a fully adult example sitting lightly on the sea with its stern somewhat elevated, much more like a Waterhen swimming than a Common Guillemot. Sooty black in plumage, with a pure white patch on the centre of the wing, as it dives we catch sight of the bright vermillion legs and feet. It is a rare bird indeed to be seen off the Farnes in June, for its nesting quarters lie much further north, although in the autumn and winter, when in quite a different plumage, it will wander as far south as the mouth of the English Channel. During the day we saw a second off the rocks on the west side of Staple Island.

Hoisting a brown mainsail and jib, we run straight for the outer island of the further group, the Longstone, leaving Staple Island and the Pinnacles on our port, but running in so close to the latter that our friends were able to take several instantaneous

photographs. The flat table-like tops of the Pinnacles were crowded with dense masses of Guillemots; every coign of vantage and narrow ledge of the dark basalt cliff was also thickly tenanted with a motley crowd of Razorbills, Puffins, Guillemots, and Kittiwakes—thousands on thousands also on the water, indifferent to our presence, scarce caring to scuttle lazily on one side, or suddenly dive, before the boat is on them. Amongst the Guillemots were many of the variety known as the Ringed or Silver-eyed, having a white ring round the eye and a more or less developed pure white streak running backward from it down the side of the head. We have frequently seen them on the Speeton and Bempton cliffs on the Yorkshire coast, but here they are certainly more plentiful than at the southern nesting-place. A very interesting bird was a Green Cormorant, or Shag, standing upright and very conspicuous on a projecting ridge off Staple Island. Unlike the common species, this is strictly marine in haunts and habits; the creature must be seen at close quarters to note the extreme loveliness of its plumage, dark green glossed with golden-brown and purple reflections—its beak gold and irides emerald, crowned, too, in the spring with a noble crest which curves forward, but now, in June, this distinguishing feature is lost. As we near the Longstone, hundreds of Terns—the Arctic, Sandwich, and Common Terns—pass and re-pass the boat, and the air is full of the coarse grating call of the larger and the soft “kree-kree-kree” of the smaller species; hundreds are beating for food in the narrows and straits between the rocks and islands. There is a constant flicker of white wings, a constant interchange of places, as if following the meanderings of an aerial dance; now one and another dip lightly to the water, but what they pick up we cannot make out. In singular contrast to these light “butterflies of the sea” are those heavy Gannets—wanderers from the Bass Rock; they, too, keep constantly crossing and recrossing each other’s courses, but at a higher level than the Terns—creamy white relieved by black-tipped wings; in flight most buoyant, now with slow and frequent flaps of their great wings, then soaring and wheeling with no apparent movement of these, till perceiving grey forms of their prey near the surface and within striking distance, they descend almost perpendicularly with nearly closed wings, like huge white bolts shot out of the blue, throwing up a sparkling column as they

strike, disappear, and in a minute rise again, with all the buoyancy of bladders, to the surface.

We could well have watched the mingled flight of Gannets and Terns for hours against the soft blue of a summer sky, but are now close in shore, and running towards the landing place at the foot of the Longstone Light. There are yet some fathoms of water under the keel, and, as we look over the gunwale, we find ourselves gazing down through the tops of a submarine forest. The broad leather-like and olive-green straps and tangled air-bladders of *Fuci* slip noiselessly under the counter, lower down are anchored masses of pale green *Ulvæ* and lovely transparent fronds of purple or pink lavers, gently swaying in the tremulous crystal; lowest of all, on the hard white sands, starfish display their coral-like fingers; amongst them we see the brilliant *Solaster papposa*, like a purple disc fringed with coral knobs.

The Longstone, now we are landed, is a long, low, ugly reef, covered with black seaweeds, barren and desolate, with scarce a trace of any land-plant. In northerly or easterly gales it is often all but submerged; nothing save the red-painted and strongly protected lighthouse and attendant buildings are seen, from the castle terrace at Bamborough, standing out clear and defined against an ever-shifting cloud of snow-white spray. In one stormy winter Cuthbertson had to wait for thirteen weeks before he was able to communicate and carry stores to the light-keepers. To-day all is calm, fair, and lovely, the sea peaceful as a sleeping giant, gently heaving, with glimmering sheets and shifting breadths of lavender over the rocky and stony ground, but emerald-green (which is the true colour of the North Sea water) where the white sands reflect the light from above.

To leeward of the reef a party of Eiders are swimming, chiefly drakes; some also stand on the rock slope at the tide edge. The duck, in her Quaker garb of quiet shading—reddish brown and black—is not easily seen when on bare rock, but the drake is always conspicuous when in his handsome and very distinctly defined plumage of brown, black, and white, suffused with rich buff, and relieved by the pale green patches on the nape. Eiders have nested on the Farnes for centuries, and are locally known as St. Cuthbert's Duck, from the protection given them by the saint. The nests, which are numerous on some of the islands, are often in very open situations; on the Noxes we found five within a

small space, all on the bare rock, without any sort of concealment except, perhaps, a solitary tuft of grass; others were placed at the bottom of low walls more or less concealed by rank vegetation, some on narrow ledges of rock hidden in wiry grasses, many also amongst the plants of campion and thrift. They are all thickly lined with a dusky-brown down full of white specks, which is gradually added to by the sitting bird from her underparts during incubation. This is the eider-down of commerce; it is very elastic, and a quantity which, when loose, would fill a top-hat, can be compressed in the hand. A pound and a half is said to be sufficient to make a quilt. Usually four to six eggs are laid; we have seen seven and heard of nine in one nest.

Considering how impatient of approach Eiders are at sea after the nesting season, their tameness when sitting on eggs is remarkable, allowing themselves to be photographed at the distance of a few feet; one on a nest, at the base of St. Cuthbert's Tower, permitted our boys to stroke her on the back without showing any inclination to leave. The colour of the female Eider is to a considerable extent protective. One of the photographs taken by our party on Staple Island was a bank of bell-campion in flower; since our return we have discovered in the picture an Eider sitting, not observed at the time of taking.

Leaving the Longstone, we pass the Harcar Rocks, now covered with Gulls and other sea-fowl. On the calmest days the tide runs like a mill-race between the islands, and swirls and twists in great circles and rings like miniature maelstroms above hidden rocks and shoals. In strong weather no boat could live in these narrow wind-swept gulches and straits. It was here, on the western point of Big Harcar, that the steamship 'Forfarshire,' with sixty-three hands and passengers, drifted helplessly from the north in a great gale on the morning of September 7th, 1838, and broke her back, the hinder part sinking in deep water. At break of day the survivors, nine altogether, were rescued by the heroine of the Farne Islands, "Grace Darling," and her aged father, then light-keeper on the Longstone. Here on the very spot, how well can we realise the desperate risk and almost hopelessness of the undertaking—

"When, as the day broke, the maid through misty air
Espied far off a wreck amid the surf,
Beating on one of those disastrous isles—
Half of a vessel, half—the rest
Had vanished."

Always, as long as the English language is spoken, will the deed wrought by this young Northumbrian maiden be treasured amongst the noblest annals of the race. Grace Darling did not long survive her deed of heroism; she died about two years afterwards, at the early age of 26.

On the south side of Brownsman we found a large colony of the Sea-swallows, chiefly the Common Tern. Much of the higher part of the island is covered with a great abundance of rough grasses and various sea-loving plants, most plentiful and conspicuous being the handsome bell-campion, with its white flower and much inflated calyx; thrift, with dense clusters of pink flowers, Greenland scurvy-grass, and saltwort. Much care is necessary to prevent stepping on the eggs of the Terns, which are deposited, to the number of two or three, in shallow depressions amongst the herbage, sometimes on the bare rock itself. Here also were many nests of the Eider, with the female sitting close. Hundreds of excited Terns filled the air, now one, and then another, swooping to within a few feet of our head, and saluting us with a continual "kit-kit-kit." Amongst the cloud of Terns careering above was one with quite a distinct call-note; we shortly picked out the bird, and watched him for some time through the glass, and compared with the Common Tern, marked his long graceful greyhound-like form and comparatively shorter wing. This was the only example of the Roseate Tern seen during our visit. The keeper on the Wamses had seen a single pair, so it is probable a few may be nesting. The late Prideaux John Selby, of Twizell House, who paid great attention to the birds on the Farnes, stated that in 1831 there was a colony on Brownsman, also another on the Wamses. We saw no Lesser Terns about the islands; in 1832 a small colony (since extinct) existed on the mainland of Holy Island. Subsequent to our visit to the islands in June, Mr. H. B. Hewetson sent twenty fresh eggs of the Lesser Tern, taken from nests on the east coast, with instructions to place them in those of the Terns on Brownsman; and it is to be hoped that the experiment may result in their establishment again on the Northumbrian coast.

Staple Island is of basaltic origin, with a slope to the north, and much fissured and broken towards the south; within a few yards of the cliff, on this south end, are three huge rocks of

columnar basalt with flat tops, absolutely crowded with dense masses of female Guillemots, each sitting upright incubating its single egg. Although so near, they absolutely ignore our presence, rolling and twisting their heads and necks in the most grotesque fashion, and strangely suggestive of a mob of excited negroes in white aprons. On the precipitous flanks of the Pinnacles, or sides of the fissures and clefts on the main island, the pretty Kittiwake has occupied every coign of vantage. Their nests, which are considerable structures, are placed everywhere on the narrow ledges and irregularities of the rock, so that the sitting bird seems sometimes clinging to the smooth surface with little or no support. The eggs are three in number, and the owners of them so fearless and tame that they continue to sit quietly, although we are watching at a distance of a few feet.

The upper and highest portion of Staple Island is covered with dense masses of bell-campion growing in a considerable depth of black peat, riddled and honeycombed in every direction with the burrows of the Puffins; many Eiders also nest here, and a vast colony of the Lesser Black-backed Gulls, and a few Herring Gulls. The nests of the former are everywhere, some almost hidden by the rank vegetation, many on the flat rocks near the sea; in the latter situation the nest is a considerable structure, and, when new, entirely composed of the green flower-stalks and leaves of the campion. The eggs—three in number—vary considerably both in size and colour. The Gulls are very fearless, and, with hoarse cries of “how, how” and “kec-kec-kec,” swoop and stoop incessantly above the head of the intruder on their domain. When sitting near a nest, and taking notes of the materials of its construction, we repeatedly felt the wind of their pinions on the backs of our necks. Mr. Hewitson (*‘Eggs of British Birds,’* vol. ii. p. 497) narrates, on the authority of Mr. Darling, of the Longstone, how an old woman, who was gathering eggs, had her bonnet riddled through and through, and almost torn to pieces by their bills. A few pairs of Razorbills frequent the rocks on the south side of Staple, but they do not appear to be a very common species here. We saw a pair or two of Rock Doves dash out from the depths of the gloomy fissures, at the bottom of which the green rollers are ever churning themselves into tortured sheets of milk-white foam.

From the foot of the ancient tower, or fire-beacon, on Staple

Island, the view is most extensive. To the east an horizon of water, seldom at rest, but to-day

“The long, grey, horizontal wall of the dead-calm sea.”

Northward, beyond the outer island of the group called the Megstone—the nesting quarters of the Common Cormorant—lies Holy Island, with noble ruins of Monastery and Priory Church, and the white lighthouse at the end of a sandy spit; beyond these is the entry to the Tweed, and in the greyer distance rises the stern rock-bound coast of Berwickshire, towards St. Abb's Head. Westward, beyond the Inner Farne, supreme in its grandeur of position, stands “King Ida's lordly pile,” Bam-borough village and grand church, backed by the low irregular ridge of Spindlestone-heugh—low crouched and like unto a sleeping dragon, and on the outer blue are “Cheviot mountains lone”—Cheviot itself and Hedgehope being the most prominent. Turn southward, miles beyond the seal-frequented skerries, and a fit rival to Bam-borough in the grandeur of its site, towers dark Dunstanborough, with haunted caverns and wild legend of Sir Guy the Seeker, and beyond this again the far-stretching, rocky, and irregular line of coast to Alnmouth Bay and Tynemouth.

On one of the Wedums we found a most interesting colony of Sandwich Terns, some hundreds in number, the largest Tern of the three species nesting on the islands. They are particularly sensitive to interruption, so our inspection of the nesting-place was only cursory. The grating call is audible at a great distance at sea, and is sufficient at any time, when recognised, to mark the whereabouts of the bird. The eggs—two in number—are of great variety and beauty; they were placed in shallow depressions, and in regular terraces at the higher part of the island. Amongst and near them were a few eggs of the Arctic and Common Terns, which also nest in large numbers on the Wedums. We noticed two or three pairs of shy, restless Oystercatchers about, and, by carefully looking the ground over, found two sets of eggs, placed in slight depressions amongst loose shingle and gravel, difficult to distinguish even when pointed out, so nearly did they assimilate with their special environments. The Oystercatcher is a handsome-looking fellow in his pretty pied plumage and red legs and bill, as he sits conspicuous on some elevated rock. We had constantly during the day heard their loud

“keep-keep-keep” from the rocks and skerries ; also the plaintive piping of the Ringed Plover. The little dark Rock Pipits abound everywhere, and we saw young on the islands well able to fly and take care of themselves.

From the chief island of the inner group there is a striking view of Bamborough Castle and distant Cheviot. There are few churchyards so picturesquely placed as that of this ancient borough, and holding within its four low walls so goodly a number of illustrious dead. At the west and highest part, beneath a stone canopy, is the monumental effigy of Grace Darling ; standing at its head, and looking eastward, we see, beyond the northern flank of the castle, the Longstone Light, where she spent her early days. On this western side, too, is the monument erected to the memory of that Rev. G. Morell Mackenzie, who, when the ‘Pegasus’ was lost on the Goldstone, in July, 1843, stood amongst the passengers and crew on deck, and prayed till the vessel went down under his feet, and the water stopped his words. Here lies also Prideaux John Selby, of Twizell House, the eminent ornithologist and natural historian of the Farne Islands. In the crypt below the chancel rest, side by side, “after life’s fitful fever,” Thomas Forster, the ill-starred and incompetent General of the rising in the North in 1715, and his most heroic sister Dorothy, immortalised by Mr. Walter Besant, niece to that still more beautiful Dorothy, the young wife of the great Lord Crewe, whose portrait hangs below that of her lord in the banqueting room of Bamborough Keep. Ferdinando Forster, uncle of Dorothy the younger, basely murdered in a duel at Newcastle by one of the Fenwicks, is buried in the same vault.

Bamboroughshire also lays claim to a third heroine in Grizzel Cochrane, daughter of that Sir John Cochrane of Ochiltree, taken prisoner in 1685, in the rising under the Duke of Argyle, and under sentence of death at Edinburgh. Disguised as a man, she crossed the border, stopped the king’s mail, and obtained possession of the warrant for her father’s execution, and thus giving time for powerful friends at Court to obtain a reprieve.

But our time is up, and the longest and most pleasant day, like everything else, must have an ending. We leave the Farne Islands to the peaceful possession of their many feathered tenants,

conscious that no wild creature has been the worse for our visit, and that the boys have behaved admirably, neither disturbing nor taking any eggs, although exposed to much temptation.

THE MARSH WARBLER, *ACROCEPHALUS PALUSTRIS*,
IN OXFORDSHIRE.

BY REV. W. WARDE FOWLER, M.A.

I HAVE long been looking out for this little bird in the neighbourhood of Oxford, where the Reed Warbler and Sedge Warbler are abundant, and where the conditions of life would seem to suit equally well the third species of *Acrocephalus* which undoubtedly visits us yearly. The discovery of a nest and eggs (now in the Nat. Hist. Museum, South Kensington) at South Newington, near Banbury, in 1886, served to quicken my ear for the voices of this group of birds, but it was not for another two years that I heard any song that could not be referred without hesitation to either of the common species. In May, 1888, I was attracted by a song of the type of the Reed Warbler's, but much stronger and more brilliant, in a privet-bush close to the Botanic Garden at Oxford; and I spent a long time, on two successive days, in watching and listening to the singer. I could not, however, distinguish it in any satisfactory way from the Reed Warbler, except by the wonderful vivacity of its song, which had even attracted the attention of the gardeners; and when it disappeared from the garden a day or two later, I was no wiser than before as to the song and habits of the real *A. palustris*.

Next year the same bird came to the same bush on May 8th, and astonished me again. I noted in my diary, after devoting half-an-hour to him:—"Wonderful out-pouring of song. Legs apparently flesh-coloured; upper parts lightish brown; under parts whitish-grey; throat quite white. Catches flies, and then bursts into song. Often perches on a twig, erect and vigorous; not so creepy as Reed Warbler." But the song was so close in character to the Reed Warbler's, in spite of its force and brilliancy, that without hearing for myself an undoubted *A. palustris*, I could not venture to call this bird a Marsh Warbler. It disappeared again, and left me in the same state of uncertainty

as the year before; which was so provoking that I determined to travel, while the summer was still young, until I actually found a Marsh Warbler, and then to study its song and habits, and put an end to all doubt.

As I had read Fatio's excellent account of the bird quoted in the second edition of Bree's 'Birds of Europe,' I thought of going to the valley where the Professor studied it, *viz.*, the Val d' Hérémonce, in Switzerland. But I wished to take with me my old naturalist guide, Johann Anderegg, and I went direct to Meiringen, in the Obrelane, where he lives. I did not need to go further to find my bird. I arrived there on June 9th, and on the morning of the 10th I noticed a little brown bird singing a remarkably sweet and varied song, at some distance from me, in cultivated ground separated from the river Aar by an embankment overgrown by scrub and weeds. I made further acquaintance with the singer, and soon satisfied myself as to his identity. I did not get a sufficiently close view of him to distinguish his outward appearance from that of the Reed Warbler, for he was very restless, singing now from a bush, now from the top of some plant or pole in the allotments, and again perhaps from a tree over my head.* But in his lively habits, his attitude when singing, and above all in his song, he was entirely different from any Reed Warbler I had ever known, and I had no difficulty in deciding at once that the bird of the Botanic Garden at Oxford was no more than a Reed Warbler gifted with most unusual powers of song.†

The bird at Meiringen was undoubtedly an accomplished

* I find, however, that in notes made that day, I describe him as having a white throat, a brown head (no stripe over the eye), an olive-brown back, and flesh-coloured legs. The colour of the back is perhaps what best distinguishes this bird from the Reed Warbler when alive; but it needs a quick eye for colour, and a good steady look at the bird, to appreciate the difference between this olive-brown and the darker rufous-brown of the other species.

† The bird has never re-appeared at the Botanic Garden since 1889, so that I have had no further chance of comparing its song with that of the true Marsh Warbler. As my notes of its attitude and colouring tally fairly well with the latter, and as Mr. Seebohm says (Brit. Birds, i. 377) that the Marsh Warbler's song is *occasionally* like that of a Reed Warbler with an unusually rich voice, I am sometimes tempted to fancy that this was after all an example of *A. palustris* on migration. But the date (May 8th) is an early one for its appearance in England.

mimic, but as I have more to say directly of his powers in this direction, I will only note that, besides the notes of other birds, he distinctly appeared to me to take pleasure in imitating the sharpening of a scythe, a sound frequently to be heard from an adjoining field. But as a rule the quality of his song was clear and sweet, and often quite individual; and it was not maintained for so long a time, or so monotonously, as the strain of the Reed Warbler, or the rattle of the Sedge Warbler, but was often suddenly broken by intervals, assuming a new character when taken up again. I could not find the nest, and I doubt if it had been by that time completed.

It was two years before I was able to renew my acquaintance with the Marsh Warbler. In June, 1891, I paid a visit to the Alps with my friend Mr. O. V. Aplin, who has already described (pp. 8, 9) how we found the nest and eggs near Interlaken, and again near Stauzstadt, and how we were favoured with unusual opportunities of observing the plumage, habits, and song of the bird. To his remarks I will only add that at Meiringen I visited alone the spot where I had found the bird in 1889, and again found him in full song. He deluded me for a moment into thinking that a Chaffinch was singing in the same bush, and once I fully believed I heard the Nuthatch's clear metallic note. He also mimicked the Skylark, the Great Tit, the White Wag-tail, the Tree Pipit, and the call of the Redstart. Again, at Stauzstadt, while Mr. Aplin was discovering the Tawny Pipit, I listened to a very fine singer, and made the following note:— "In the song there are parts that remind me strongly of the Nightingale, as well as many other imitations; but there is a very sweet varied individuality about it, which makes it quite unmistakeable. The bird is in fact more highly bred and accomplished than either of the other British Acrocephali; he is not all excitement like the Sedge Warbler, nor yet lethargic like most Reed Warblers. He sings here on the top of a reed with great spirit, showing the bright yellow of the interior of his bill, as he stretches it wide with head erect." Soon after our return to England, Mr. Aplin had an egg brought him which was undoubtedly that of a Marsh Warbler; the nest was in meadow-sweet, as was the case with the two we had found in Switzerland. This caused me to pay attention to a large osier-bed near my home in the extreme N.W. of Oxfordshire, which was overgrown

with meadow-sweet; but I could see no sign there last year of anything but our usual birds. We had no record of the living and singing bird as yet in this county.

On Whitsunday last (June 5th) I was passing this same osier-bed, when I was struck by fragments of a song which at once recalled the Marsh Warbler to my memory. The osiers had not been cut in the winter, owing to the owner's reluctance to pay more for cutting than he can get by selling, and in a great part of the two and a half acres the stems were already twice my height, thickly crowded, and beset with a very close undergrowth of long grass, marigolds, and meadow-sweet, &c. I could not see the bird, but I felt pretty sure of the song. I had to go back to Oxford that night, but the following Thursday evening I contrived to play truant, and the next morning (June 10th), three years to a day after my first acquaintance with the bird at Meiringen, at 8 a.m. I penetrated into the osier-bed, and spent a long time there in a very hot sun. I was well rewarded by quite as wonderful a display of mimicry as I had heard at Meiringen or Stauzstadt. This bird completely deceived me once with the song of the Tree Pipit, and constantly imitated the Lark, the Swallow, and others; and though I could only obtain a momentary look at him owing to the height of the osiers, I came away fully convinced that I had found the Marsh Warbler in England at last. It was not only the mimicry,—for a lively Sedge Warbler will of course often come out with other birds' notes in the course of his incessant rattle: it was the sweet clear tone of the voice, with its rapid changes, its sudden stoppages, and its comparatively rare lapses into sounds that could be called grating or sibilant.

Early on Monday, the 13th, I brought over from Oxford a young friend, Mr. H. C. Playne, who knows well the songs and habits of all our common Warblers. I sent him down alone to the osiers while I went to get some breakfast, and joined him in half-an-hour, curious to see what impression the song had made on him. I found him listening to imitations of the Tree Pipit, and quite convinced that he had never met with the songster before. We then entered the osiers, and made some search for a nest, but without success, for the bird never stayed long in one place, and we had nothing to guide us. Meanwhile we heard some curious imitations, among which was an intensely comical kind

of croak, suggestive of a Jackdaw, and the call of the Partridge. We failed again to get a good steady look at the bird. Oddly enough, we found a Reed Warbler chatting away merrily at the other end of the osiers,—the first of this species that I have as yet found in the neighbourhood. Abundant as they are on the Isis, they seem little disposed to adventure themselves far up Cherwell or Evenlode. It is the Evenlode which flows past our osier-bed, dividing here the counties of Oxon and Gloucester.

We returned to Oxford well satisfied with our morning's work, but I was still anxious to bring Mr. Aplin's experience and acuteness to bear upon the bird, and as our Oxford term ended on Saturday, the 18th, I asked him to come and spend the following Sunday with me at Kingham. The weather was cold, but an occasional glimpse of the sun promised us a fair chance of success; and it was a good omen that it happened to be precisely the anniversary of our discovery of the nest at Interlaken last year.

On the Saturday afternoon we entered the osiers at about 5.30, and made our way along a tolerably open ditch for some distance without hearing the song. My old terrier was in front of us, and presently disturbed a pair of birds, which began croaking angrily. Mr. Aplin got his glass on one of these and declared himself satisfied; and shortly afterwards we heard something of the old familiar song. But a careful search for the nest in the nettles and meadow-sweet all around was quite fruitless.

Next morning we spent two hours in the osiers, with excellent results. Each of us got a good steady look at the bird through our glasses as he sang from the top of a willow-stem, with bill wide open, showing the reddish-yellow gape as we had seen it in Switzerland; the crest slightly raised, the head erect, and the white feathers of the breast fluffed out. The under parts are not rufous buff as in the Reed Warbler, but yellowish on the flanks, and nearly white in the centre. The upper parts are distinctly *paler* than in the allied species, and are in no respect rufous. This morning the song was delicious, constantly varied, and with many imitations, among which we noticed the song of the Lark and his strident call; the calls of the Chaffinch, Thrush, Yellow Wagtail, Redstart, and Goldfinch; the Greenfinch's twitter, followed by an attempt to produce his call; and once I heard a sweet warble closely resembling that of the

Blackcap.* The Swallow was often mimicked, and it is worth noting that late in the evening before we had seen Swallows sweeping about noisily over the osier-bed, and then settling down to roost there. We also occasionally heard a kind of croak which suggested the voice rather of a frog than a bird. Lastly, when we moved to another part of the osiers, we listened for some time to what we believed to be another singer of the same species, in whose strain the u-tic-tic of the Whinchat was very obvious; a sound which can be heard any day in the summer from posts, rails, hedges, and telegraph-wires in the immediate neighbourhood of the osier-bed. In the course of our stay we saw many Sedge Warblers, and heard one unmistakable Reed Warbler; so that all three *Acrocephali* are at present quartered in this admirable shelter.

On Tuesday, the 21st, I worked once more slowly through the osiers; the morning was fine, but I was unable to catch the song. On emerging at the further end, it occurred to me to visit a small bed of osiers, wedged in between the stream and the railway, about a hundred yards distant; and here I at once heard the unmistakable voice. What I saw here convinced me that the birds had not yet built their nest, but were actually then at work on it; for two or three times they flew swiftly down into the ditch by the railway, once into a clump of nettles, and returned in a minute or two to the osiers. There was no trace of a nest in the nettles, and I believe they were collecting materials; and if they settled in this small bed, which is higher and drier than the other, we should have no great difficulty in discovering the nest. In this place a pair of Sedge Warblers were feeding young; and I was interested in noticing the difference in the flight of

* Mr. Aplin tells me by letter that on May 31st, 1889, he listened to a mocking-bird of extraordinary powers, in a big hedge, with overgrown ditch, near Bloxham, which he took to be a Sedge Warbler at the time. It produced faithfully the songs or notes of the Green Woodpecker, Starling, Blackbird, Corn Bunting (very exact), Lark, Chaffinch, Greenfinch, Sparrow, Swallow (song), Redstart (alarm-note), Partridge (very exact), and those bubbling notes of the Nightingale which, according to our joint observations, *always* occur in the song of the Marsh Warbler. Mr. Aplin did not see the bird for more than a moment, but ascertained that it was an *Acrocephalus*; and no doubt it was *A. palustris*. Its imitations were "so exact as to almost convince one against one's certain knowledge that one was really listening to the birds themselves."

the two species. That of the Sedge Warbler is somewhat weak and fluttering, and he rarely flies far, though one day I saw one dance up into the air like a Whitethroat and descend something after the manner of a Tree Pipit; but the Marsh Warbler flies quickly and lightly, and evidently delights in the exercise.

On the 22nd I explored a few other likely places, especially at Bourton-on-the-Water, where the clear Windrush is bordered by gardens, meadows, orchards, osier-beds, and everything that could make a Marsh Warbler happy. But though the Sedge-bird was abundant, of the other two species I neither heard nor saw a sign. We must not jump to the conclusion that *A. palustris* is really common, and has been constantly overlooked.

On Saturday the 26th, my friend Mr. A. H. Macpherson came down from London to see and hear the bird, and to make a thorough search for the nest in the smaller and more practicable osier-bed. He got up at three the next morning, and searched without result till nearly eight; but he saw the bird well, and heard a few snatches of song. A stray suggestion of his to account for our failure to find the nest (which we found in Switzerland at once and without difficulty), is, I think, worth mentioning, *viz.*, that this is the first visit of the species to this locality,* and that one or more males have arrived as usual first, and have failed to find mates in spite of continual singing. If in consequence of this they sought better luck elsewhere, the cessation of song would be explained; I have not heard it since the 26th, though the Sedge Warblers have been vociferous all along.

On July 15th, I made one more attempt to find the nest, in company with Mr. Playne, who bicycled over from Minchinhampton to help me. We were again, however, unsuccessful, and we can only hope that next May will bring the bird here again, and that we shall have more continuous opportunities of observing it.

* The osier-bed is of recent planting; I have myself skated on floods in the very place it now occupies.

NOTES AND QUERIES.

MAMMALIA.

The Polecat in Pembrokeshire.—Far from being “extinct” in Pembrokeshire, as asserted (p. 264), the Polecat is still to be met with in the wilder parts of the county. One day when ferreting we bolted two from rabbit-earths at Stone Hall, and frequently disturbed the “varmint” with our terriers in the rougher covers.—MURRAY A. MATHEW (Buckland Dinham).

Mr. E. Cambridge Phillips must have been misinformed as to the extinction of the Polecat, *Mustela putorius*, in this county. Though undoubtedly less common than formerly, it is far from being extinct. I have had ten or twelve examples from this neighbourhood within the last six years.—CHARLES JEFFREYS (Tenby).

Pied Stoat in Notts in May.—On May 28th last the keeper here was waiting for Stoats on a stile at Little Gringley, when one ran out into the open field, within a few yards of him, which was pure white, except an irregular brownish line extending down its back. Before he had time to shoot, it made off again. He says he has shot white and pied Stoats here before in May. A great many of these varieties were shot last winter in this neighbourhood, and sent to Retford for preservation.—LEONARD BUTTRESS (Grove, near Retford, Notts).

BIRDS.

Shrike killing Sand Martin.—On July 19th I observed a Red-backed Shrike strike down and kill a Sand Martin on the wing. The Martin fell on the lawn, about eight yards from the dining-room windows. I picked up the bird, and found it had been struck at the back of the head, and was quite dead. After examining it I replaced it where it fell, and stationing myself at the window, I saw the Shrike return in about five minutes, and carry off his prey to a hill about eighty yards away, there to eat it at his leisure. Is it usual for the Shrike to kill birds on the wing, more particularly such swift-flying species as the Martins?—L. CREAGHE-HAWARD (Bramford, Ipswich).

Turtle Dove nesting in a Squirrel's Drey.—Flushing a Turtle Dove from an old Squirrel's drey built at the top of a small oak, at the latter end of June, I ascended the tree and found the bird in possession, having lined only with fibrous roots the centre of nest and deposited one egg.—J. STEELE ELLIOTT (Park Road, Sutton Coldfield).

Wild Geese and Starlings in West Meath.—On July 4th a flock of Wild Geese, numbering forty-eight birds, was observed by a gentleman and his gamekeeper, flying in a westerly direction over Lough Iron, in

West Meath. They were distinctly heard as well as seen. The weather was unusually cold at the time. On the 13th three flocks of Starlings were remarked: one flock numbered more than sixty birds, another forty, and another thirty. Surely these Starlings could hardly have been hatched in Ireland this season.—FRANCES J. BATTERSBY (Cromlyn, West Meath).

Eared Grebe in Merionethshire.—As usual during a stormy season, Grebes were numerous along the Merionethshire coast, the Great Crested and Little Grebes being the most frequent. On Dec. 17th, 1891, I obtained a specimen of the Eared Grebe, *Podiceps nigricollis*, in full winter plumage. The Slavonian Grebe was fairly plentiful from November till about Christmas, but disappeared later.—G. H. CATON HAIGH (Penrhyndeudraeth, Merionethshire).

Ruddy Sheldrake in Co. Donegal.—I have lately received from a correspondent in Donegal a female Ruddy Sheldrake, *Tadorna rutila*, which he shot out of a flock of twenty of these birds towards the end of June last. He reports that they were very wild, and rose on the wing when he was about sixty yards from them. He fired, and the one he sent me fell winged. It is an unusual time of year to meet with this species. Those which have hitherto been met with have generally occurred in winter, and are supposed to have wandered from some ornamental water on its becoming frozen up. But I know of no place in this county where ornamental waterfowl are kept, or from whence the birds in question are likely to have strayed. It is possible we may hear more of them from some other part of the country.—J. STEELE ELLIOTT (Park Road, Sutton Coldfield).

Birdsnesting in Suffolk.—On May 28th I found a Snipe's nest, from which I flushed the old bird, containing five eggs. All these appeared to be the produce of one bird, and all were fertile, having been incubated about a week. I found a nest of the Lesser Redpoll, with two eggs, in a roadside hedge, which was only the second nest I have seen in Suffolk. On May 25th and on June 10th we took a clutch of four fresh Hawfinch's eggs from a silver-fir near this house. A friend of mine has taken several nests of the last-named bird this year within a short distance of Bury St. Edmunds.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Shoveller breeding in Co. West Meath.—Our herdsman took us to look at the nest of a Shoveller, *Anas clypeata*, on June 7th. It was built in a field near our lake (Glen Lough), and in the centre of a tuft of rushes which concealed it from sight. The bird rose when we came close to it, and we had an excellent view of her, and of the male Shoveller, which was flying about the shore of the lake. There were eight eggs in the nest. This is the second time the Shoveller Duck has nested in the same field.—FRANCES J. BATTERSBY (Cromlyn, Rathowen, West Meath).

FISHES.

Herring-fishing at Christiania.—It would appear that Herrings at times will eat almost any kind of animal refuse they can find, for while staying at Christiania during the early part of this year I saw large numbers caught on hooks baited with mussels, or even strips of the bodies of their own companions. The harbour of Christiania is kept open all winter by powerful ice-breakers, but the extreme head of the fjord called "Frognerkilen," between the city and the peninsula of Bygdö, becomes completely frozen over. As soon as the ice is safe—about the middle of January—numbers of men go out on it to fish for Herrings. They sit on a small sled, and propel themselves over the surface of the ice at a great pace by means of an iron-shod pole. Arrived as near the edge of the ice as they can venture, a hole is broken through with the pole, and a line to which is attached four or six hooks is let down. At the end of the line is fastened a heavy lead-sinker provided with two formidable hooks. The line is held in the hand and drawn gently up and down till a bite is obtained, when it is hauled up as rapidly as possible. When there is a large shoal of Herrings I have often seen three or four caught at once, one or two being frequently foul-hooked by the grappling-hooks on the sinker as it is hauled through the shoal. The fish average about 12 in., and are exceedingly beautiful when first taken out of the water, but the intense cold—often 3° or 4° F.—soon freezes them and turns them to a dull silver-blue.—HAROLD RÆBURN (31, Clare Road, Halifax).

Greenland Shark at Overstrand.—On July 12th a Greenland Shark, *Læmargus borealis*, came ashore at Overstrand in Norfolk, alive, but so exhausted as to be easily captured. When I saw it, a few hours afterwards, its eye was green, and the skin a dull white colour—not nearly so leaden as the plate in Couch's 'British Fishes,' by which we identified it. The fishermen considered it weighed 8 cwt. My coachman measured it, and made its length 10 ft. 3 in., and the circumference 6 ft. 1 in., but perhaps it was unnaturally inflated. It contained no food. This Shark has been bought by Mr. Cyril Flower, M.P., for Mr. W. Rothschild's Museum. Mr. Southwell recorded one at Lynn so recently as last January (p. 153), remarking that it was the fourth that he had notes of.—J. H. GURNEY (Keswick, Norwich).

REPTILES.

The Black Viper of Markwick.—The individual peculiarity in a Black Viper, referred to (p. 272) as possessing three poison-fangs in one jaw, is of no specific value. I have killed the ordinary Viper with a similar arrangement of the poison-fangs, and it is probably a common occurrence in all poisonous snakes. There is a skeleton, in the Natural History Museum at South Kensington, of a large poisonous snake (I forget of what

species, but think a Rattlesnake) with a most formidable array of poison-fangs. If I remember aright, this specimen has four fangs on one side of the jaw, all growing from the same root, and two or three similar fangs on the other side of the jaw.—GEO. E. LODGE (5, Verulam Buildings, Gray's Inn).

INSECTS.

Tortrix viridana in the Midlands.—As in North Wales, so with us, the above moth is exceedingly common this year, and the oak woods have suffered terribly. The Rooks, Jackdaws, Starlings, and Sparrows congregated in immense flocks to feed on the larvæ and pupæ, and now that the insects have emerged most birds seem to feed on them. The insectivorous birds search the branches above, the finches the ground beneath, and the Swallows and Martins constantly skim around the trees—all helping to keep in check this little pest, as it has now become.—J. STEELE ELLIOTT (Park Road, Sutton Coldfield).

NOTICES OF NEW BOOKS.

Beast and Man in India: a popular sketch of Indian Animals in their relations with the People. BY JOHN LOCKWOOD KIPLING, C.I.E. London: Macmillan & Co.

THE general opinion of cultivated Europe as to the temper of Orientals towards animals has been expressed by Mr. Lecky, in a clause of the sentence with which he concludes a survey of a growth of consideration for animals as an element of public morals, in his 'History of European Morals.' He says:—"The Muhammadans and the Brahmans have in this sphere considerably surpassed the Christians." In the opinion of Mr. Kipling there is enough truth in this statement to give interest to an examination of it, and this furnishes the key-note to the views expressed in the volume before us.

Mr. Kipling has lived long enough in India, and used his powers of observation well enough, to be trusted as a reliable guide, and the insight which he gives into the daily life of the natives in relation to animals may be regarded alike truthful and picturesque. While maintaining that no precept of mercy has protected animals in servitude in India, Mr. Kipling admits that a more humane temper prevails with regard to free creatures there than in the West. Village boys are not seen stoning frogs, or

setting dogs at cats, nor tying kettles to dogs' tails, and it has not been found necessary to forbid bird-nesting by Act of Parliament. The Indian schoolboy, on his way to school, passes numbers of Squirrels, but never throws stones at them, and the Sparrow, the Crow, the Mynah, and the Hoopoe move from his path without a flutter of fear. The india-rubber catapult of the West has not yet reached him; and the sling and *golél*, or pellet-bow, are only used when guarding fruit and crops from the hungry Parrakeet and the omnivorous Crow.

One of the most surprising things in India, says Mr. Kipling, is the patience with which depredations on crops are endured. With far less provocation the English farmer organises Sparrow clubs, and freely uses the gun, the trap, and poisoned bait. And the Indian farmer suffers from creatures that earn no dole of grain by occasional insecticide. The Monkey, the Nilghai, the Black-buck, the Wild Pig, and the Parrakeet fatten at his expense, and never kill a caterpillar or a weevil in return. He and his family spend long and dismal hours on a platform of sticks raised a few feet above the crops, whence they lift their voices against legions of thieves.

The principle of abstaining from slaughter is pushed to an almost suicidal point in purely Hindu regions, and becomes a serious trouble at times. Mr. Kipling states that a large tract of fertile country in the North-West Provinces, bordering on the Bhurtpore State, is now lapsing into jungle on account of the inroads of the Nilghai and the Wild Pig. The "Blue Cow," or Nilghai, is sacred, and may not be killed even by villagers whom the creature drives from their homes, and there are not enough sportsmen or Tigers to keep down the Wild Boar.

The tolerance or indifference which leaves wild creatures alone is unfortunately an intimate ally of blank ignorance. That townspeople should be ignorant of Nature is to be expected, but even in the country a Flycatcher, a Sparrow, and a Shrike, are all spoken of as *chiriyas*, birds merely, and not one in fifty, save outcaste folk, according to Mr. Kipling, can tell you anything of their habits, food, nests, or eggs. The most vague and incorrect statements are accepted and repeated without thought, a habit common to all populations, but more firmly rooted in India than elsewhere. Original observation and accurate statement of fact seem almost impossible to the Oriental, and education has not

hitherto availed to help him. In the West public instruction becomes more real and vital every year, but in the East it is still "bound hand and foot to the corpse of a dead literature."

The author concludes that, admitting the need for a legislative measure for the protection of animals consonant with the wishes and feelings of the most cultivated classes in India, and of itself a sign of advancing civilization and morality, it would be a task as difficult as hate to prove that the people at large have any abnormal and inborn tendency to cruelty.

To give an idea of the scope and variety of the subjects dealt with in Mr. Kipling's book, we may remark that he has several chapters on domestic animals, including Elephants and Camels, besides chapters on birds, monkeys, and reptiles, animal-calls, animal training, and animals in Indian art. India has a great name for the training of animals, and the pages devoted to this subject in the present volume contain much that is interesting.

The late Rev. J. G. Wood wrote unadvisedly that "in India, trained Otters are almost as common as trained Dogs," but this is one of the many inaccuracies to be found in the works of this popular compiler. Mr. Kipling tells us that trained Otters are not used throughout Hindustan, nor in Central India, nor in the Punjab (where they exist in numbers) and even in the regions where they assist in fishing they are never seen out of the hands of their owners, obscure river-side tribes. They are only employed in the back-waters of Cochin, in part of Bengal, and on the Indus river. The Cormorant and the Pelican are also used for fishing by the Indus boatmen, as in China, but, as might be expected from its slow and clumsy gait, the Pelican, though furnished by nature with a fine "game-bag" or "creel," is inferior as a fisher to the Cormorant.

It must be a pretty sight to observe the hooded Cormorants on the fisherman's house-boats, and the Otters tethered to stakes close by, the latter playing with the no less amphibious children, and behaving like the playful intelligent water-cats they are. But, as Mr. Kipling points out, this sight, and the knowledge that they are used in this wise, are distinctly uncommon, and out of the range of the people of India at large.

Several pages are devoted to an account of the Cheeta, or Hunting Leopard, and the method of training him. Most people, we imagine, are under the impression that the animal to be tamed

must always be taken young, but Mr. Kipling states that the only point where real skill comes into play is in the first capture of the adult animal when it has already learned the swift bounding onset, its one accomplishment. The young Cheetah, he says, is not worth catching, for it has not learned its trade, nor can it be taught in captivity. It is much the same with Hawks; falconers who know their business will always prefer a wild-caught "passage-hawk" to an "eyess," or nestling.

With an eye to the picturesque, Mr. Kipling has not omitted to write of this sport as practised in India; and the subjoined extract will not only convey his own impressions on the subject, but will serve to give an idea of his style of writing. He says:—

"Falconry, which is still a favourite sport in Sind and Northern India, is too extensive to be more than glanced at. The literature of the subject is just as fantastic as the writings of our forefathers in Europe; as in our old falconry books, Hawks are broadly described as light- or dark-eyed, round- or long-winged, noble or ignoble, and the sport is considered in the highest degree aristocratic. Sir Richard F. Burton is the only English writer who can claim to be an authority on the subject in its literary as well as in its practical aspect."

This remarkable statement strikes us as scarcely accurate. Sir Richard Burton's only claim to be regarded as an authority on this subject rests upon the fact that he once published a little book entitled 'Falconry in the Valley of the Indus,' in which he recorded the impressions produced upon his mind by having witnessed something of the practice of hawking in Sind. But, so far as can be gathered from his book, he had very little knowledge of the literature of the subject; and, to judge by the many errors into which his pen has led him, he can have had but little practical acquaintance with the sport, beyond what might be acquired by any intelligent "looker-on." Mr. Kipling would never have ventured upon the above-quoted assertion had he himself been acquainted with any of the English or French treatises on Falconry which have appeared during the last twenty years.

"The identity of the Indian apparatus of the sport with that of Europe strikes even the un instructed. The hawk's hood of soft deer-skin, prettily embroidered with silk and gold, the falconer's gloves, jesses, lures, and

hawk-bells, are still regularly made in the Punjab, with one or two trifling variations. European pictures show the lure fitted with portions of a bird's wing, which are absent from the Indian lure, and the falconer goes afield with his hawks perched on a hoop slung round his body, while here, when more than one are carried, they travel on a horizontal pole. Staying once at the chief town of a native State, I wondered at the number of hawks carried about, and concluded that when a man wanted an excuse for a stroll, he went to the Raja's mews and got a hawk to take out for an airing on his wrist. During a gathering of chiefs at Lahore, to meet Lord Dufferin and the Duke of Connaught, Falcons and falconers came to swell the retinues of the Rajas, and I observed the constables on duty at the museum in my charge wanted to make the men leave their hawks outside when they came to see that institution. A stuffed bird in a glass case might, of course, tempt a hawk, but when hooded the creature is as well behaved as a sleeping child.

“The attendant circumstance of Indian falconry is not without its charm, especially during the clear cold weather of the Punjab winter. I remember riding to a hawking-party across a wide sandy plain, where cultivation was scanty, a fresh wind blowing, and in the far distance the snowy range of the Himalaya sparkled white against the intense blue. A group of Elephants, with howdahs and trappings blazing in scarlet and gold, furnished the vast wind-swept spaces with a touch of colour, and even the blue and red patterns daubed on their gigantic foreheads looked delicate and pretty. The strange heraldic monsters in beaten silver, with glass eyes, that supported the howdahs, and the great red cloths splashed with gold embroidery, would have been garish at close quarters; but here they suited perfectly with the cavalcade of horsemen attired in scarlet and gold, the leashed dogs straining and snarling, and the motley crowd of beaters, chill in the morning sunshine. The hawks sharply turned their heads in expectation, tugging and straining at their jesses like anchored ships in a gale. But when all was over, the Bustards found and flown-at had escaped without scathe, and one of the hawks was lost. As a man who has never been able to find pleasure in the chase, and who never possessed a gun, I found no personal fault with this issue; but when people set forth to do a thing, they ought to do it well. Hawks must often be lost; for a country-side proverb about *kangni*, the small Indian millet, says that its cultivation is ‘as risky as keeping a hawk.’

“I have heard of flights where the hawk does all that is set down for him in the books, and I have watched the careful training of hawks to come back to the lure, where they are rewarded with a bit of newly-killed Crow, &c.; but I strongly suspect the best of the business is the riding and the company. Any one in the habit of looking at birds in India may see free hawking enough,—the Shrike, which in a town garden brings

down a Sparrow nearly as big as himself, the gallant and tigerish Sparrow-hawk, and, on far hill-sides, Falcons of two or three kinds."

With this extract we may conclude our notice of Mr. Kipling's volume, which we have read with much interest. It is lightly and pleasantly written, and for an elementary study of Indian animals, their treatment and usage, and the popular estimates and sayings current about them, it may well be recommended to the notice of our readers.

Palms and Pearls; or, Scenes in Ceylon. By ALAN WALTERS.
8vo. London: Richard Bentley & Son. 1892.

ALTHOUGH not a professed naturalist, Dr. Alan Walters is evidently a good observer, and the account which he gives in this volume of his sojourn in Ceylon is very pleasant reading.

We shall not attempt to follow him through the chapters which deal with the history of the island under Portuguese, Dutch, and British rule; nor have we space at command to quote his picturesque descriptions of the scenery and native productions. Our concern is rather with what he has to tell us regarding the fauna, to which about seventy pages are devoted.

Passing over his remarks upon the Ceylonese Elephant, on which an entire volume has been written by Sir Emerson Tennant, and upon the native Wild Boar, which, we are told, weighs not unusually six hundredweight, we come to the Cheeta (Hind. *Chita*), or hunting Leopard, concerning whose occurrence in Ceylon authorities seem to differ. Turning to Blanford's 'Fauna of British India,' we read, in the volume devoted to Mammalia, p. 92:—"How far south *C. jubatus* ranges does not appear to be recorded; the animal is not found on the Malabar coast, nor, according to Jerdon, in Ceylon." Dr. Walters's remarks on the subject are somewhat paradoxical. At p. 147, he writes:—

"More common (*i. e.*, than the Sloth Bear) and less dreaded is the Cheetah (native *Cooteah*), which in Ceylon is a different animal from the native Leopard, with which it is often wrongly classed. Both in habits and appearance it is quite distinct, in that it is smaller, and possesses, according to some observers, no retractile power in its claws, which are not curved, but formed like the toe-nails of a dog."

This description clearly points to *C. jubatus*, but on the very

next page, after a description of *Felis pardus*, and a black variety of it, we read :—

“In Ceylon all these animals are, as I have said, commonly called Cheetahs, and they *must not be confounded with the hunting Cheetah of India*, not a pure feline, but lanky and long-legged, unable to climb trees, and usually considered as a link between felines and canines.”

We are at a loss, therefore, to know whether Dr. Walters includes *F. jubatus* as a native of Ceylon or not.

Writing of the large Fruit-eating Bat (*Pteropus*), commonly called “Flying Fox,” from the shape of the head, he states that it is “found here and there in very large numbers, and is as great a pest in Ceylon as another species of the genus is in Australia.” He adds that last year a party of scientific gentlemen made an experiment to ascertain the possibility of destroying the “Flying Foxes” wholesale *by dynamite*, but the method was found impracticable, and the “Flying Fox” still flourishes to the great detriment of the fruit crops.

Of the deer to be met with in Ceylon, Dr. Walters states that the finest of them all, the Sambar, the native name for which is *gona rusa* (not *sona russa*), is

“Not often shot, but gives first-rate sport to hounds, for which purpose the best strain of English foxhounds has proved a failure. Far better runs are made with dogs crossed either between foxhound and pointer, mastiff and bloodhound, or greyhound and kangaroo-dog. It is a grand sight to see a Sambar of 600 lbs. weight dashing for his life down a steep broken hill at a headlong pace.”

The Spotted Deer, *Axis maculata* (native *Chetool*, Hind. *Chital*), the only gregarious Deer in Ceylon, is found in large herds in the north of the island. At p. 161 we read :—“A deer peculiar to Ceylon is *C. orizus*, almost as large as the Sambar, but with a different arrangement of spots on the coat.” In this sentence there are no less than three mistakes: (1), *Cervus oryzus*, the “Hog Deer,” is not confined to Ceylon; (2), it is nothing like so large as the Sambar, standing only 2 ft. high at the shoulder, while the Sambar measures from 4 ft. to 4ft. 6 in.; (3), the Sambar has no spots; and we may add (4), the Hog Deer is considered by the best authorities to have been introduced into Ceylon, where it is confined to a small area between Matura and the Kaltura River.

Of the 325 species of birds recognised in Ceylon, 38 are stated to be peculiar to the island, and of these Dr. Walters gives a very brief account. When we call to mind Major Legge's splendid quarto work on the Birds of Ceylon, Dr. Walters's account naturally appears meagre in the extreme; but then it is not intended for the professed ornithologist, but rather for the general reader who is contented for the moment with a merely superficial glance at the avifauna of the country through which he is being conducted.

Exaggerated descriptions of the Reptiles of Ceylon have from time to time found their way into print from the reports of imaginative and too credulous travellers; but when all allowance has been made for "snake stories," the fact remains that the presence of snakes form a distinct drawback to the pleasure of living in many parts of the island. Having made personal acquaintance with Australian and Tasmanian snakes, the author considers that they cannot compare with those of Ceylon either for number or venom. He repeats a curious story about the *Naja-kalu*, or Cobra-stone, which the reptile is said to carry about in its mouth for the purpose of attracting fire-flies, on which it feeds. One of such stones having been produced by a native, it was found by an expert, Professor Hensoldt, to be a water-worn yellow pebble, oval and flattened, and emitting a green phosphorescent light, and pronounced to be a rare variety of fluor spar known as "clophane," a mineral so sensitive that it will shine when merely warmed by the hand. "There seems to be little doubt," says Dr. Walters (p. 181), "that the *Naja-kalu* is used by the Cobra as a decoy. All it has to do is to deposit the stone, and the attracted fire-flies come within reach. Perhaps also, as its own sight is feeble, the shining stone may serve as a sort of range-finder."

In subsequent pages our author deals with Sea-snakes, Crocodiles, Lizards, Iguanas, Frogs, Fishes, Insects of various orders, Spiders, and Scorpions; truly a wide range of subjects, on none of which he has space to dwell at any length. But his remarks are very pleasantly written, and if not always quite accurate from the naturalist's point of view, they serve at all events to direct the attention of travellers, and even stay-at-home readers, to some of the many beautiful and curious productions to be met with in that remarkable island which has been named "the land of palms and pearls."

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ON EPIDEMICS AMONGST MICE KEPT AT THE HYGIENIC INSTITUTE AT GREIFSWALD, AND ON THE BEST MEANS OF COMBATING A PLAGUE OF FIELD MICE.*

BY PROFESSOR F. LOEFFLER.

DISEASES amongst mice kept for experimental purposes in scientific institutions are of somewhat rare occurrence, and I do not know that the appearance of an epidemic amongst them has ever previously been observed. I am, however, in a position to give an account of what has occurred amongst the white mice kept at this Hygienic Institute within the last few years. These are not merely of bacteriological interest, but, as I shall show, they are of no little practical interest also.

The stock of white mice at the Institute is kept in two quadrangular glass cases, each about 40 cm. square, which are covered with wide-meshed wire gauze. The mice are fed on oats and pieces of bread softened by being dipped in water. The bottom of the cages is covered with sawdust, over which a little straw is scattered, so that the mice may hide in it.

In July, 1889, the attendant informed me that while cleaning a cage which contained about forty mice, he had found dead ones amongst them for some little time. I immediately made an inspection, and found three in a cage apparently diseased. They were at once isolated, and died in the course of the two

* Translated from the German 'Centralblatt für Bakteriologie und Parasitenkunde,' Band xi. pp. 129—141 (10 Feb. 1892).

following days. On dissecting the first I found the typical condition of Koch's "mouse-septicæmia" (*Mäuseseptikämie*). The culture from the organs affected confirmed the diagnosis. Dissection and culture showed that the other two mice had also died of this "mouse-septicæmia." During the next few days three more died in the same case, all from the same cause. According to the attendant's report, at least fifteen mice died, and all probably from the same disease. It is highly probable that the infection was conveyed through the digestive system, as the first mice found dead had been partly devoured. We did not discover the cause of the appearance of the epidemic in the cage. Nothing had been done in observing the bacilli of "mouse-septicæmia." When the infected and diseased animals were removed, it ceased.

It is of special interest to find the bacillus which Koch employed to produce disease among mice by inoculation, spontaneously producing an epidemic disease among mice in captivity.

The second much more important and extensive epidemic broke out in October, 1890. There were ten mice in the first cage, and forty-five in the second. All the deaths occurred in the second cage. The ten mice in the first cage were fed and treated in exactly the same way as those in the adjoining cage, but remained quite healthy.

The attendant noticed that several mice died about the 7th to the 10th of October; and by the 19th eight of the forty-five mice were found dead in the cage. I was not told that the mice were dying till the 19th October, when another large mouse was found dead. I immediately gave orders that all dead mice should be given to me for examination. On Oct. 20th two mice (1 and 2) were found dead, and a mouse which appeared diseased was isolated in the morning, and died in the afternoon (3).

On the morning of Oct. 21st three more mice were found dead (4, 5, 6), and five apparently diseased ones were isolated. In the afternoon an old one (7) and a young one (8) lay dead in the cage.

On the 23rd a young diseased mouse was isolated. It died in the afternoon (9).

On the morning of the 25th one of the isolated mice died (10). In the afternoon two more died (11 and 12).

After this all the large mice were taken out of the cage, and each isolated in a glass. The large case was emptied, cleaned, and disinfected with a solution of corrosive sublimate of the strength of one per cent. The young mice were then replaced.

Oct. 27th. Four large isolated mice died (13—16). Three small ones died in the cage (17—19).

Oct. 31st. An isolated mouse died (20).

Nov. 1st. A small one died in the cage (21).

Nov. 2nd. A large isolated mouse died (22).

Nov. 7th. Another of the same died (23). With the death of this mouse the epidemic came to an end. In the course of four weeks thirty-one mice had died out of forty-five in the cage, the mortality thus amounting to 69 per cent. The first eight mice were not examined, but all the others were. All those examined had died of the same disease, and no doubt this was the case with the first eight. The epidemic must be regarded as uncommonly fatal. It is highly probable that all the mice would have died if the epidemic had not been arrested by strict isolation and disinfection.

Nearly all the mice found dead in the large cage had been more or less eaten. The brain was generally gnawed away, and in several cases the bodies were half-devoured. This fact, taken in connection with the observations on the first epidemic, which was caused by the bacilli of "mouse-septicæmia," leads to the suspicion that the infection is caused and multiplied by receiving the cause of the disease *per os*. Further investigations confirmed this suspicion.

The appearances, on dissection, were on the whole very similar, but varied considerably in individual cases. On opening the abdominal cavity, a splenic tumour was almost always observed. The spleen was large, brownish red, and generally solid. The liver was usually parenchymatously turbid. It generally displayed a very large amount of fatty matter, and sometimes also showed small yellow specks. Sometimes the liver was very full of blood, and sometimes dry and shining; but it frequently exhibited an entirely normal appearance.

Now and then a mouse was found in which the abdominal cavity contained fresh blood, without my being able to discover the source of the hæmorrhage. The stomach and intestines showed numerous alterations. Very frequently slight hæmorrhage

occurred in the mucous membrane of the pyloric region of the stomach, as well as at the anterior portion of the duodenum, and the "Peyer's bodies" were frequently congested, and also somewhat swollen. The lower part of the small intestine was generally filled with blackish contents. The mesenteric glands were distinctly, and sometimes considerably, swollen, dark reddish grey in colour, and permeated by hæmorrhage.

The kidneys were usually pale, sometimes parenchymatously coloured. The lungs were sometimes normal, and sometimes blotched with red. Here and there brownish red portions were visible. The brain exhibited nothing peculiar.

Bacteriological investigation gave precisely similar results in all the mice examined. On expressed preparations (*ausstrichpräparaten*) of the liver and the spleen, I found short bacilli, usually very numerous, but sometimes very sparingly, resembling the bacilli of pigeon-diphtheria (*Taubendiphtherie*). These varied in length and breadth, both in the same individual and in different cases. Many appeared truncated, especially when the bacilli were present in large masses, and many were strongly developed. In this respect the rods resembled those of the typhus-bacillus, which also varies in size within certain limits. When examined in hollow object-holders, they exhibited lively movements similar to those of the typhus-bacillus. This led to the suspicion that these, like the latter, might have multiple *flagella*. In fact, they behaved like the typhus-bacillus when macerated in a suitable infusion, but better still when macerated in rather strong alkali, which made the lateral *flagella* visible. In some mice bacilli could be detected in all the organs, while in others they were sought for (in blood from the cardiac region, for example) without success. But similar bacilli were obtained by culture from all the mice. Tubes of gelatine cultures were prepared from the liver, from the spleen, and from the cardiac region. The culture from the last named remained sterile in many cases, but colonies were invariably developed from the spleen, and especially from the liver. The number of these differed very considerably. Sometimes the whole surface of the gelatine was covered with an even coating of bacilli; sometimes the separate colonies were separated and developed at a considerable distance from each other, and sometimes only a few colonies appeared on the entire surface of the gelatine. On the whole, the number of

colonies corresponded to the quantity of bacilli found in the expressed preparations. In those cases where no bacilli could be discovered with the microscope a few typical colonies were only developed exceptionally by cultivation.

The mode of increase of the bacilli was as follows:—On gelatine-tubes kept in the temperature of the room hardly anything was to be seen with the naked eye after twenty-four hours. But with the lens small colourless particles were already discernible. After forty-eight hours the colonies became visible as round, greyish white or bluish-hyaline bodies, about as large as a pin's head. During the next few days the colonies enlarged, if they were wide apart, till they formed patches from 3—4 mm. in breadth. They then generally lost their rounded shape, and formed zigzag protuberances with rough edges. Then the gelatine began to get somewhat turbid. Slight alterations in the composition of the gelatine (as happens with each new preparation) influenced the appearance of the colonies. In one preparation the colonies were always round and rather thick, and consequently but slightly transparent, and whiter. In another the condition already described appeared more like that of typhus-bacilli. The individual bacilli in this cultivation were of unequal length. Among the more numerous were short forms, with lively motions; others long and thread-like, sluggish, or even motionless. They were readily coloured by the aniline dyes employed, and best with the alkaline solution of methylene-blue, which I have elsewhere recommended.

In plate-cultivations (*plattenkulturen*), the deep-seated colonies appeared round, at first hyaline-grey and slightly granulated, afterwards yellowish brown, and strongly granulated. The colonies nearer the surface were strongly granulated, and delicately furrowed, like colonies of the typhus-bacillus, but not so prominent.

On "Agar-Agar," a greyish white and little-characteristic coating was formed. On blood-serum, and especially on sweetened peptonized bouillon, mixed with blood-serum, as I have elsewhere recommended, a transparent coating appeared. Distilled water soon became turbid. The formation of spores was not observed in any nutritive fluid, not even when heated.

They grew upon potatoes in a very characteristic manner. They formed a whitish and not very thick coating, and the adjacent substance of the potato showed a dirty greyish blue

tint. In sweetened peptonized bouillon they grew very strongly. They rendered it turbid with the gas engendered, and then formed a thick cloudy layer on the surface. The previously neutral reaction of the bouillon now became rather strongly acid. The presence of alcohol in the distillation was proved by the iodine test.

The bacilli also developed well in milk. The appearance of the milk was not altered during their growth, but the reaction became rather strongly acid.

On examining sections of the organs, I found the bacilli generally arranged in masses within the capillaries. They formed masses, like those in human typhus. Now and then single specimens were seen in the capillaries; they often lay within them like large colourless cells. The yellowish spots in the liver, which were often perceptible to the naked eye, contained no more liver-tissue, and were generally surrounded by disintegrated matter. There was always a mass of bacilli in the centre of these portions. It appeared as if the bacilli had caused the disappearance of the liver-cells, and disintegration. In other places the masses lay in the normal tissue, without causing disintegration. The mesenteric glands were pervaded with enormous masses of bacilli. The appearances rather reminded me of those which I had obtained after inoculating mice with the bacilli of pigeon-diphtheria (*Taubendiphtheriebaccillen*).

The bacillus belongs indubitably to the group of typhus-like bacilli of which a considerable number are already known. As it has most resemblance to human typhus-bacillus, I propose to call it the bacillus of mouse-typhus (*Bacillus typhi murium*).

As regards the mode of infection, in this epidemic, it is undoubtedly caused by infection through the digestive organs. This is abundantly proved by the alterations in the small intestine, and in the mesenteric glands. I cannot positively affirm that the infection is caused entirely by nibbling a companion who has died of the disease. In a number of mice which I examined with all care I found bacilli in the contents of the intestine. I think it not improbable that living bacilli which have been evacuated with the fœces may get mixed with the food, and be thus swallowed by other mice. Young mice especially, which as a rule took no part in gnawing at the corpses, might have become infected by foul food. The possibility of infection by inhalation had also to be considered.

The opportunity for the pulverisation of bacilli in the straw is very favourable. The diffusion of germs through the air, if it happens at all (and I have not studied this mode of infection experimentally), is certainly of very subordinate importance. In the second mouse-cage, which stood close to that which contained the diseased mice, there was no infection.

The duration of the epidemic was somewhat lengthy. Eight mice were isolated on the 25th of October, and the last of these did not die until the 7th of November. If we assume that this mouse was only infected on the 25th of October, just before its isolation, thirteen days elapsed between the date of its infection and its death. The period between infection and death was experimentally established as from one to two weeks. I could not make these experiments on white mice until I was certain that the epidemic had really disappeared. I therefore waited for some weeks before I commenced with them.

In the meantime I resolved to make some experiments on other animals, to see whether they were susceptible to the bacillus. My chief interest centred in the Field Vole (*Arvicola arvalis*), which was obtainable in great abundance in the neighbourhood of Greifswald in November, 1890. Through the kindness of Dr. Ollmann and Dr. Hesse, I was easily enabled to procure plenty of these little animals for experiment. As is well known, Koch has proved that the Field Vole is proof against the minute bacillus of "mouse-septicæmia"; but, on the other hand, I have established the fact that it is extremely susceptible to the bacillus of glanders; whereas the tame white mouse is proof against it. It therefore appeared doubtful to me whether the Field Vole would be susceptible to the bacillus causing the epidemic amongst white mice. On Nov. 10th I inoculated two Field Voles under the skin of the back with the gelatine culture obtained from the liver of the mouse which had died on Nov. 2nd. One Field Vole was found dead on Nov. 12th. The spleen was large, the liver moist and shining, and the lungs spotted. On making an expressed preparation of the liver, the typical bacilli were found in great abundance. In the gelatine-tubes a thick coating of bacilli was formed. On the same day, Nov. 12th, and immediately after the examination, this Field Vole was thrown into a cage amongst three healthy Field Voles, which at once began to gnaw the body.

On Nov. 14th, four days after the inoculation, the second Field Vole died. At the point of inoculation I found a yellowish fibrinous gathering containing enormous masses of bacilli, partly truncated, and partly enclosed by large colourless cells. Otherwise the result of the examination was as in Field Vole No. 1. A preparation of the liver exhibited very numerous bacilli, the presence of which was also proved by cultivation.

The three Field Voles which had fed on No. 1 died on the 17th, 18th, and 20th November respectively. They all exhibited the same conditions, and in particular the mesenteric glands were greatly enlarged, and of a brownish red colour.

The third Field Vole, which died on the 20th November, was again thrown into a cage with three others. These three all died on the 28th and 30th November, and on the 2nd December, after eight, ten and twelve days respectively. They appeared lively till about two days before their death. After this they appeared less lively, and at last sat huddled up, with erect hair. They were hardly dead when their comrades made them a source of death to themselves by devouring them. It is well known that Field Voles devour the dead or weak and sickly individuals of their own species. After this first experiment, I could no longer doubt that the *Arvicola* was at least as susceptible to the bacillus as the white *Mus*.

I made so many experiments in infecting Field Voles that I cannot repeat them all in detail. I will only say that the infection *per os* invariably succeeded, whether I threw them potato-cultivations, bread moistened with bouillon-culture, or only poured a few drops of the latter into the cage; the animals invariably died from eight to twelve days afterwards, and in every carcass the typical bacillus was present.

This proof of the great susceptibility of Field Voles to this bacillus, and their easy destruction by this means, seems to me to be of great practical importance to agriculture. In many districts these Field Voles are a veritable scourge. They cause enormous losses by their fecundity and voracity. Brehm gives an appalling picture of their habits and their importance to Agriculture in his *Thierleben* (vol. ii. p. 388). He says:—

“ Their food consists of every sort of vegetable substance. When they can obtain seeds they feed only on these, but at other times they content themselves with fresh grass and herbs, roots and leaves, clover, fruits and

berries. Beech-mast and nuts, corn, turnips and potatoes are badly attacked by them. When the corn begins to ripen they assemble in hordes in the fields, bite the stalks through at the base till they fall over, then gnaw them through above, and drag the ears into their burrows. During the harvest they follow the steps of the reapers from one crop to another, devour the corn that has dropped among the stubble, gather the ears up which have fallen in binding up the sheaves, and at last find their way to the stackyards, where they find provision for the winter. In the woods they collect the fallen haws, juniper-berries, beech-mast, acorns, and nuts in their burrows. During the hardest weather they fall into uninterrupted hibernation, but when milder weather returns they rouse up, and feed on their stores. They are incredibly voracious, and require much to satisfy them, but they cannot do without water.

“Field Voles are very gregarious, and live socially together, at least in pairs, but more commonly in great hordes, and therefore they link one burrow to another. They multiply with extreme rapidity. Even in April we find from four to eight young in their warm nests, which lie from 40 to 60 cm. below the surface of the ground, and are softly lined with fine fragments of hay or straw and moss; and in the course of the summer the female produces young from four to six times more. It is highly probable that the young of the first brood are themselves ready to breed in autumn, and the amazing increase in their numbers is thus easily explained.

“‘Under favourable circumstances,’ says Blasius, ‘the Field Vole multiplies in an incredible manner. Many instances are known in which a large part of the harvest has been destroyed over large tracts of country by their inordinate increase, and more than a thousand acres of young beech trees have been destroyed by their gnawing the bark. Those who have never experienced such a vole-year can hardly form a conception of the almost incredible swarms of mice in the fields and plantations. They often appear in a particular neighbourhood without their gradual increase having been observed, as if they had suddenly come upon the earth by magic. It is possible that they sometimes migrate suddenly from place to place. But their rapid multiplication is generally foreshadowed for weeks beforehand by the increase of the Buzzards (*Mäusebussarde*). During the twenties, the Lower Rhine was repeatedly visited by such a plague. The fields were so undermined in places that you could scarcely set foot on the ground without touching a mouse-hole, and innumerable paths were deeply trodden between these openings. On fine days it swarmed with voles, which ran about openly and fearlessly. If they were approached, from six to ten rushed to the same hole to creep in, and unwillingly impeded each other’s progress by crowding together. It was not difficult to kill half-a-dozen with one blow from a stick in the crush. All seemed

to be strong and healthy, but mostly rather small, for the greater part were probably young ones. Three weeks after I revisited the place. The number of voles had actually increased, but the animals were apparently in a sickly state. Many had scurvy places or sores, often over the whole body, and even in those which appeared sound, the skin was so loose and delicate that it could not be roughly handled without destroying it. When I visited the place for the third time, four weeks later, every trace of them had disappeared. But the empty burrows and passages awakened a much more dismal feeling than when they swarmed with life. People said that the whole race had suddenly disappeared from the earth as if by magic. Many may have perished from a devastating pestilence, and many have been devoured by their fellows, as happens in captivity; but people also spoke of the innumerable hosts that had swum across the Rhine at several places in open day. No extraordinary increase was noticed anywhere over a wide area; but they seem to have disappeared everywhere at the same time, without reappearing elsewhere. Nature must have put a stop to their inordinate multiplication at the same period. It was fine warm autumn weather, apparently favourable to them to the last moment.' "

In order to give some idea of the vast hordes of Voles which sometimes appear in certain districts, I may state that in 1882, in the single district of Zabern, 1,570,000 field-mice were caught in fourteen days; in the district of Nidda, 590,427; and in that of Putzbach, 271, 941.

"In the autumn of 1856," says Lenz, "there were so many mice in one district of about four leagues in circumference between Erfurt and Gotha, about 12,000 acres of land had to be reploughed. The sowing of each acre at current wages cost 6s., and the ploughing up was estimated at 1s. 6d.; so that the loss amounted to from £2000 to £4500, and probably much more. On a single large estate near Breslau 200,000 were caught in seven weeks, and delivered to the Breslau manure-factory, which then paid a pfennig (half-a-farthing) per dozen for them. Some of the mouse-catchers were able to supply the factory with 1400 or 1500 per day. In the summer of 1891, 409,523 voles and 4707 hamsters were caught and counted in the district of Alsheim in Rhenish Hesse. The local authorities paid 2523 gulden (about £164) for them!

"In the years 1872 and 1873 it was just the same, and local complaints arose in all parts of the country about the vole-plague. It might be compared to one of the plagues of Egypt. Even in the day, on the sandy plains of the Mark of Brandenburg, thousands of voles were counted in particular fields, and in the rich corn-lands of Lower Saxony, Thuringia, and Hesse, they abounded to a fearful extent. Half the harvest was destroyed, hundreds of thousands of acres were left untilled, and thousands

of pounds were spent on their destruction. Agricultural Societies and Governments were implored to seek ways and means of staying the plague.

"Sometimes these voles attack plantations. In 1813 and 1814 they caused so much destruction in England among freshly-planted trees of one or two years' growth as to cause serious alarm.* Throughout wide districts the little animals not only devoured the bark of all the saplings, but also peeled the roots of many oaks and chestnuts that were already fairly grown, and thus destroyed them. The Government was forced to take the most energetic measures to repair this enormous damage.

"Unfortunately, man is powerless against these voles. All the means of destruction which have yet been devised seem insufficient to check the inordinate multiplication of these greedy hosts; only Providence and the useful predaceous animals, to which man is so hostile, can help him. "Borers" have been used with good results, with which, where the soil permits it, holes are made in the ground; 12—18 cm. in circumference, and 60 cm. deep. When the voles fall in, instead of burrowing their way out, they devour each other. When the fields were being ploughed, children followed with sticks, and destroyed as many as possible. Smoke has been driven into the burrows, poisoned grain thrown in, whole fields saturated with a decoction of strychnine or spurge, *Euphorbia cyprissias* (mit einem Absud von Brecknuss oder Wolfsmilch). In short, every means has been adopted to get rid of this terrible pest; but in general all these methods have proved nearly useless, and some of them, especially poisoning, highly dangerous. The most efficacious poison not only destroys all the mice in a field, but likewise their worst enemies, and consequently our friends—foxes, martens, stoats, weasels, buzzards, owls, and rooks; besides partridges, hares, and domestic animals, from pigeons to horses and oxen,—a sufficient reason for abstaining altogether from the use of poison. It is painful to all naturalists and lovers of animals to see the enemies of the mice, as in 1872, poisoned and destroyed, instead of cared for and protected. Short-sighted people—farmers who cared more for hare-hunting than for making the best use of the land—were delighted when they found, besides dead mice, hundreds of poisoned rooks, buzzards, owls, foxes, weasels, and stoats; but they did not consider what mischief they had entailed upon themselves in their senseless efforts to destroy the voles. It was not the destruction of the useful but despised mouse-killers that concerned them, but when hares, partridges and domestic animals were also poisoned, they were at last induced to give up the use of poison. Till then, the warnings of far-seeing advisers were disregarded. The warnings which they had given, both verbally and in print, that laying poison in the fields might perhaps benefit the infected land, but not agriculturists, were not appreciated till too late. Besides poison, smoking out the voles was

* This was in the Forest of Dean and in the New Forest.

tried on suitable ground with satisfactory result. All the holes were stopped up, and poisonous coal and sulphur-smoke (bisulphide of carbon) was allowed to pour into the burrows which the voles reopened; but this efficacious mode of destroying them could not be employed everywhere, and was very expensive. People knew not what to do, because they had neglected to destroy the mice at the proper time."

Thus far Brehm. I believe it would be possible to destroy the Voles effectually by means of the bacillus which I have discovered, even if they did not devour their dead and dying comrades, as they do in captivity. It would be easy to produce any quantity of cultivated fluid, to drop it on bread or corn, and to scatter this infected food over the fields infested.

But, before attempting this experiment on a large scale, it would be necessary to make extensive trials to discover whether other animals besides Voles could be infected with the bacilli *per os*, or not. I have made a series of experiments in this direction, and have obtained the following results. The natural destroyers of the voles, namely, cats, are proof against the bacillus. I have fed five cats with many dead or dying house- and field-mice, and not one of them contracted the disease. I have also fed a large number of rats on the bacillus without their becoming affected.

Among the field-mice which were brought me I found several specimens of the "Brandmaus" (*Mus agrarius*), which is distinguished by a black stripe along the middle line of the back, over a reddish yellow fur; this species, too, did not become diseased. Nor did small singing birds of different kinds, whose food was damped with the solution, sicken. No result followed in the case of fowls, pigeons, guinea-pigs, and rabbits, though they were fed with infected food for a long time.

In the case of two four-weeks' old pigs, which were fed with large quantities of cultivated bacilli, one remained quite healthy after several months' observation, and the other died, eight days after the commencement of the experiment, of abdominal catarrh, which was probably not produced by the bacilli. No trace of the bacilli could be obtained from the organs of the animal by means of cultivation.

Amongst all the animals on which experiments were tried by infection through the digestive system, only the house-mouse and the field-vole have hitherto shown themselves susceptible. Con-

sequently, the danger of other animals becoming affected by taking food infected by the bacillus is very slight. But in the meantime, before commencing an experiment upon a large scale, it would be necessary to make more extensive trial on animals of the most different kinds, especially on all the species which are of any importance to agriculture.

But I must premise that many of the animals which are not susceptible to the infection through their food, sicken and die when inoculated with the bacilli hypodermically. I succeeded with subcutaneous inoculation in the case of several rats, small birds, pigeons, and guinea-pigs. In the case of the birds, an extensive yellowish lardaceous infiltration was locally developed at the point of inoculation in the thoracic muscles, which led to necrotic separation of the diseased part. In this substance I found enormous masses of bacilli. But I could not obtain any from the liver of the dead animals by means of cultivation. They died in from three to eleven days after inoculation. Rabbits showed themselves to be only slightly susceptible. At the point of inoculation only slightly sympathetic inflammation appeared, or local discharges, which lasted for weeks, but finally healed up.

From the foregoing observations, I hope that the new *bacillus typhi murium* will give us a weapon which may be effectually used against the Field Voles which cause so much damage to agriculture. The best time for contending with them seems to me to be Spring, when the frosts are over, but before their food has become very abundant.

It is a very favourable circumstance that the bacillus retains its vitality for a long time both in the wet and in the dry state. Gelatine-cultures retain their vitality and infective properties after being kept for six months.

The question then arises, What is the origin of the epidemic? This question I cannot answer. The bacilli bear a certain resemblance to those which I have found in pigeon-diphtheria; also to those of the pseudo-tuberculosis of rabbits and guinea-pigs, which I discovered in 1883, when employed at the Hygienic Institute, and which I have carefully studied and experimented on; to the bacilli of the American and Danish swine-plague; to the bacillus of ferret-disease, the bacillus of the spontaneous rabbit-septicæmia of Eberth, the *bacterium coli commune*, and other forms belonging to the group of typhus-bacilli. It might

perhaps be thought that the bacillus of mouse-typhus was related to one of the species of bacteria which I have mentioned, and might be a variety of one or other of them. But this cannot be the case. No work has been done in the Hygienic Institute for the last few years with any of those bacteria, except with the *bacterium coli commune*, and the bacilli of the spontaneous rabbit-septicæmia, which Prof. Eberth was kind enough to send me. But these are altogether different from the bacillus of mouse-typhus.

The next thing thought of was the possibility of infection through the food. But, though all the mice were fed on the same oats and bread, those in one cage were decimated by the epidemic, while not a single mouse sickened in the other. For the present, therefore, the origin of the bacillus remains in obscurity.

In the course of 1891 the same bacilli have twice caused a fatal epidemic among the mice in the Institute. In May it killed nine mice out of seventeen, and in September eighteen mice out of thirty-eight. On each occasion the epidemic could only be arrested by long-continued isolation of all the mice.

THE PLAGUE OF FIELD VOLES IN THESSALY, AND ITS SUCCESSFUL COUNTERACTION BY THE *BACILLUS TYPHI MURIUM*.*

BY PROFESSOR F. LOEFFLER.

IN the middle of March of the present year it was reported in all the papers that telegrams had been received from Larissa to the effect that the plains of Thessaly were infested with myriads of Field Voles, which threatened to destroy the whole harvest. This news was specially interesting to me, because I had published an article in the 'Centralblatt für Bakteriologie und Parasitenkunde' (Band xi. pp. 129-141, 10 Feb. 1892), in which I had announced a new bacteriological method of combating the plague of Field Voles. If the news in the papers was true, it offered me a rare and favourable opportunity to test the practical efficacy of the *bacillus typhi murium* which I had discovered. As I stated in

* Translated from the German 'Centralblatt für Bakteriologie und Parasitenkunde,' Band xii. pp. 1-17 (5th July, 1892).

my former paper, the bacillus, when absorbed through the digestive system, proved only fatal to house-mice and field-mice, but appeared to be perfectly innocuous to many other species of animals, such as cats, rabbits, guinea-pigs, pigs, small singing birds, pigeons, and fowls. I also stated that it was important for the practical utility of the bacillus to ascertain by numerous experiments that all farm-animals enjoyed similar immunity. I therefore made experiments in feeding sheep, which Councillor Becker, of Eldena, placed at my disposal in the most obliging manner. The results fully answered my expectations, for though the sheep is particularly susceptible to disease, those on which I experimented took enormous doses of the bacillus without showing the least symptom of illness, whilst all the voles which were treated with the same bacillus died, without exception, of "mouse-typhus" after the usual period of from eight to fourteen days. The results of the experiments rendered it in the highest degree probable that the larger farm-animals, such as horses and oxen, would likewise be proof against infection. In any case it seemed to me that the practical application of the bacillus might be tested without hesitation in the Thessalian fields which were threatened with such danger, where almost the only animal of importance in the neighbourhood, the sheep, had been proved to be unsusceptible to it.

On March 29th, the Greek Government, influenced by the report of his Excellency the Greek Ambassador at Berlin, M. Rangabé, who had studied the pamphlet I sent him, and perhaps partly also by telegraphic information, respecting the bacillus which I had discovered, from the eminent French bacteriologist, Prof. Pasteur, requested me to supply them with tubes of the virus for experiment in Thessaly. I felt no further hesitation about carrying out the experiments on a large scale.

It was first necessary for me to explain how the experiment was to be conducted, that there might be some certainty of attaining the desired result. I had learned from my experiments and observations that within the narrow limits of a cage the disease was communicated from one infected animal to another in the course of a few weeks, so that at length all were attacked. The infection was communicated by a healthy animal taking the bacillus in food fouled by the fœces of those already ailing which were charged with bacilli; and afterwards by their devouring the

individuals which had died of the disease, and which swarmed with bacilli. The first mode of infection of course was possible in a state of freedom. But it was doubtful whether Field Voles in a state of nature would devour the bodies of their dead comrades, and feed on the brain and entrails, as they invariably do in captivity. Many experienced agriculturists, however, thought that they do feed on the dead corpses in the same way in a state of freedom, though others doubted whether this supposition was correct. Again, it seemed uncertain to me whether the voles would run from one burrow to another, and thus spread the disease. It was therefore not enough to infect a few mice, set them at liberty, and wait to see whether the disease would be propagated in the course of some weeks, as within the narrow limits of a cage; but it was needful also to devise some mode of infection in which the propagation of the disease by cannibalism should not be the main object. Doubtless the result would be obtained with much greater certainty if the bacillus were scattered with food in the most wholesale manner over all the lands infested by the voles in order to accomplish the destruction of the majority by primary infection. As I was doubtful (a doubt fully justified by subsequent experiments) whether the exhaustive undertaking which I contemplated in Thessaly could be carried out without my personal supervision, I promised his Excellency the Greek Ambassador, M. Rangabé, that I would consent to furnish the Greek Government with some preparations of the bacillus, though I was unwilling to do so because I was doubtful whether this means of destroying the voles could be carried out in the way which I intended, and because I was afraid that some mishap might occur which might have nothing to do with the method itself, but which might throw discredit on this entirely new bacteriological experiment. But I declared that I was quite ready to carry out my own experiments in Thessaly myself if the Greek Government would defray the travelling and hotel expenses for myself and an assistant. On April 1st I received a telegram informing me that the Greek Government invited me to come to Greece on the terms which I had offered. But, before definitely accepting the invitation, I wished first to ascertain a very important point, which was taken for granted, but which my experiments on other species of mice showed to be by no means necessarily the case, whether the Field Vole which had

invaded Thessaly was really the same species, *Arvicola arvalis*, which occurs with us, and on which I had tested the action of the bacillus. The brown rat, which belongs to the genus *Mus* (*M. decumanus*), as well as a species distinguished by a black longitudinal streak along the back ("Brandmaus," *Mus agrarius*), had shown themselves proof against the action of the bacillus, when fed with it. I therefore telegraphed as follows to his Excellency, M. Rangabé:—

"Before I start with my assistant, I should like to be certain that the Field Vole in question is *Arvicola arvalis*. The species is very important, as I have only established the action of the bacillus in *Arvicola arvalis*. Please enquire in Athens, and let me know.—Loeffler."

Next day I received the answer:—

"It is *Arvicola arvalis*, called 'campagnol' in French.—Rangabé."

After this important preliminary was settled, I no longer hesitated to try the bacteriological conclusions with the Thessalian Field Vole. My preparations were quickly made. A large quantity of the bacillus on obliquely stiffened "Agar Agar" in glass tubes was prepared, and carefully packed in a case. Besides this, my assistant, Dr. Abel, and I both took two tubes with cultivations of the bacillus in our personal charge, so that, in case the large box should be lost, we should have some preparations as a foundation for other experiments. On Tuesday, April 5th, we started from Berlin, and after four days' constant travelling viâ the Brenner, Brindisi, Corfu and Patras, we arrived on April 9th in Athens. Next morning I announced our arrival to his Excellency, M. Konstantopulos, the Prime Minister. At ten o'clock arrived Dr. Pampoukis, the head of the bacteriological laboratory in Athens who was instructed by the Government to aid us in carrying out the experiments. The bacteriological laboratory in Athens, which was founded by the former Prime Minister, M. Trikoupis, at the instance of M. Chatzimichalis, the Professor of Pathology, forms a branch of the Pathological Institute conducted by Prof. Chassiotis. At the Institution were a dozen Thessalian Field Voles, which the Government had ordered to be sent to Athens at my request. We went thither with Dr. Pampoukis to see them, and to satisfy ourselves about the important question of the species.

I perceived at the first glance that the Thessalian Field Vole was undoubtedly different from our *Arvicola arvalis*. It was considerably larger, paler in colour, with large shining eyes, and a very short tail. It had a much more vigorous and rat-like appearance than our Field Vole.* It was enough to damp my expectations considerably to discover that I had to deal with an obviously different, though allied, species. Before we could think of undertaking any further measures and preparations for the practical application of my method in Thessaly, it was necessary to ascertain whether this species was susceptible to infection by the bacillus, especially *per os*. Three of these Field Voles were immediately subjected to subcutaneous inoculation with some of the cultivated bacillus which I had brought with me, and three others were fed with pieces of bread dipped into some virus diluted with water. When I afterwards visited his Excellency the Prime Minister, I informed him of my observations respecting the species, and declared that before anything further could be attempted, we must wait for the result of the experiments which had just been commenced.

The Director of the Agricultural Department of the Ministry, M. Gennadius, then added that the scientific determination of the species was rather difficult, and that the Thessalian Field Vole exhibited several of the characters of *Arvicola arvalis*, but that it might possibly be *Arvicola Savii*.

The question of the susceptibility of the Thessalian species asserted itself, to my great joy, much more rapidly and favourably than I had dared to hope. One of those inoculated died in two days, the second in three, and the third in three and a half days. All the bodies exhibited quantities of bacilli in the internal organs, which could also be obtained from them by the ordinary methods of cultivation. The first animal fed with infected matter died in five and a half days, and a second in seven days; both exhibited the characteristic pathological and anatomical changes of "mouse-typhus," *viz.*, enlarged spleen, parenchymatous liver and kidneys, and inflamed and swollen mesenteric glands.

From these results it appeared that the Thessalian vole was even still more susceptible to "mouse-typhus" than our *Arvicola*

* Later on I propose to publish an exact description of the species, when I receive the specimens which I have had preserved in alcohol.

arvalis, which generally did not die until ten or twelve days after absorbing the bacillus with its food. The body of one of the inoculated voles which was left in the cage was found next morning half-devoured, the brain and liver being eaten away, although the three animals in the cage were plentifully supplied with food.

We at once commenced our preparations. In accordance with the experiments which I had carried out at Greifswald, the bacilli could be propagated in various inexpensive cultivating fluids. Infusions of oat- and barley-straw had proved very suitable for this cultivation. By adding one per cent. of peptone and one-half per cent. of glucose, or grape-sugar, to this infusion, cultivating fluids were obtained, in which milliards of bacilli could be developed at incubation-temperature in one night, after the addition of a few germs.

The next thing to be done was to sterilise these cultivating fluids in large quantities. The bacteriological laboratory was excellently fitted up, but did not of course possess apparatus for the preparation of hundreds of litres of cultivating-fluid. I had hoped to find a large steam disinfecting apparatus in Athens in which the sterilisation of large quantities of fluids might have been undertaken. But there was no large apparatus of the kind in the city. The only apparatus suitable for my purpose was in the University Hospital. It was a steam disinfecting apparatus of half a metre broad, and over one metre long, and was heated with coal. This apparatus was at once placed at my disposal in the most obliging manner by the authorities. The straw was boiled in large boilers in the kitchen of the Hospital. The decoction was poured through a sieve, and placed in glass flasks covered with wicker basketwork, to be sterilised in the flasks, the mouths of which were stopped with wadding. But although the flasks were put into a cold oven, and gradually heated, they could not sustain the sterilisation, owing to the very unequal strength of the glass. Two flasks out of three burst. Nor would large glass flasks containing six litres bear the sterilisation. We were consequently obliged to abandon the use of glass. The only material from which large vessels could be quickly and cheaply made, and which would bear the heating, was tin. But before having large vessels made of this material, it was requisite to ascertain whether the germs would multiply in tin. The bacilli

yield an acid in the course of development, and perhaps their growth might be unfavourably affected by substances derived from the vessel which might be dissolved. A preliminary experiment, however, in a small tin vessel showed that the development of the bacillus proceeded without interruption. After this, four large milk-can-like vessels, each containing sixty litres, were prepared. These were filled with the straw-infusion, to which peptone and grape-sugar had been added, neutralised with sodium carbonate (*mit kohlen-saurem Natron*), and sterilised by being boiled thrice for two hours in a current of steam. After the vessels had cooled down to 40° C., they were charged with a pure culture of bacillus, and submitted to a temperature of over 30° C. After two days, the bacilli were developed in the vessels in great abundance. At the same time, with the friendly aid of M. Pampoukis and his assistant, M. Metaxas, 412 tubes were filled with pure culture on obliquely-stiffened "Agar." With each Agar-tube we were able to impregnate at least a litre of water in which the pieces of bread designed to infect the voles were to be dipped. We had thus sufficient material to infect a large district in case the bacillus-laden infusion should have been spoiled in transport.

On April 16th we set sail in company with M. Pampoukis for Volos, arriving there early on the 18th, and took the train to Larissa, the capital of Thessaly, in the neighbourhood of which we were to commence our proceedings. On the road we encountered in the neighbourhood of Velestino great flocks of Buzzards, Kites, Sparrowhawks, and Storks, flying around the fields and fallow lands. It has been observed in other countries, too, that an increase of Field Voles is usually accompanied by a great increase of the various animals which prey upon them. The railway traverses a wide plain, bordered on the east by the Kissavos (the ancient Ossa), and on the north by the snow-covered Olympus. The plain is bounded on the west by a low chain of hills, and is the most important of the plains infested by the voles near Larissa. The whole of Thessaly is really one vast plain bordered by mountains, and divided by the range of hills just mentioned into the plain of Larissa and the plain of Trikala. It is traversed from west to east by the River Peneios, which descends from Pindos into the plain near Kalabaka, south of the wonderful rock-monasteries of Meteora, and leaves the plain north-east of Larissa, between Olympus and Kissavos, forming

the beautiful vale of Tempe. The soil is extremely fertile, heavy, and in many places reddish loam, which is often inundated by the Peneios in winter over a large extent of country. These inundations are connected with the frequent occurrence of intermittent fever in the low-lying districts. The whole plain is treeless, except near Velestino, the first station on the line from Volos to Larissa, which may be due to a large number of springs which rise there. This vast fertile plain is for the most part the property of large landholders. Some of these gentlemen own as much as a hundred thousand acres of land. The population is very scanty. The villages are mostly small and unimportant. The houses are built close together in such a manner as to encompass the much larger mansion of the owner like a wall. Every peasant has a certain portion of the area allotted to him for cultivation, and receives a share of the harvest in return for his labour. The comparatively small number of inhabitants is of course insufficient to cultivate these extensive flats. Very large districts, perhaps more than two-thirds of the country, lie fallow. The fallow lands are used to pasture large flocks of sheep, goats, and herds of oxen.

About every three years the same tracts of land come into cultivation. There is no artificial manuring of the soil. In these extensive fallow fields the voles can multiply undisturbed. Last year the harvest was a good one, for the first time since Thessaly again became Greek territory. The Field Voles, which have always been plentiful in Thessaly (the ancient Greeks had their Apollo Smintheus, or Myoktonos, the Mouse-destroying God), multiplied considerably on account of the good harvest. The following winter (1891-92) was very mild, and did them no harm, and therefore at the end of February, when a warm spring set in, they appeared in larger numbers than for twenty-five years previously. The Station-master at Velestino, M. Amira, was the first to call public attention to the appearance of immense numbers of voles at the end of February. The notion of their sudden invasion of the Thessalian plain is out of the question.

As soon as public attention was directed to their appearance, it was confirmed by reports received from very different and widely-separated localities, in the Plain of Larissa. These simultaneous reports led to the notion that there must have been an invasion from without, but this was certainly not the case. At the beginning of March the voles were only beginning to

troop from the slopes of the hills and the fallow-lands to the cultivated fields. It was frequently observed that they followed regular paths during their inroads. Thus they advanced along the railway embankment; their progress seemed to be rather slow. Perhaps they do not advance further till the inhabitants of one of their strongholds or so-called castle (*Burg*) have become too numerous. The "runs" which they excavate are at a depth of about twenty to forty centimetres below the surface of the ground. The extent of these "runs" varies, and we found them extending in length from thirty to forty metres and more. These "runs" are connected with the surface by vertical holes of about five centimetres in diameter. In many places four, five, and more holes led to the same "run." In such cases there is generally not far off an enlargement for the nest, lined with finely-gnawed vegetable material, where the young are produced and reared. In front of newly-opened holes, the earth, which has been thrown far out, forms smooth hillocks. There were many well-defined and well-trodden paths on the ground, by which the voles pass from one hole to another. They are never seen out of their holes by day, not even in places where the entire ground is riddled with holes like a sieve. They do not come out in search of food till evening; even then not many are to be seen, but the peculiar squeaking noise they make is heard everywhere. Next day all sorts of freshly-severed fragments of plants are found in the holes. Stalks of corn they manipulate by standing on their hind legs, and gnawing through the stalk; when this is bitten off they drag it into their holes to devour it there, and sometimes make it smaller. They are extremely prolific. Beginning in March, the female produces from six to twelve young ones every month. A reliable observer informed me that he had counted twenty-one fœtuses in the uterus of a pregnant female. The danger to the fields consequently increases every month. The number of voles noticed this spring was apparently as large as in 1866. At that time also they were first noticed in the fallow-fields; but, as the present mischief done to the fallow-fields was but slight, the voles attracted no particular attention, and no measures were taken for their destruction. But when the vertical rays of the sun dried up the fallow-fields at the end of May, 1891, as happens every year, the mice invaded the cultivated fields, in which alone they could find

food, and caused such terrible ravages in a short time that last year scarcely any harvest was gathered. How suddenly, and with what amazing rapidity, the voles did their work of destruction is recorded in the reports of several official commissions. One evening a field was visited, which was to be mowed the following day; but when the labourers came to the place next morning they found nothing left to cut. The voles had destroyed the entire crop in a single night. A miller in the neighbourhood of Velestino reported that he went to his field early one morning, cut a measure of corn, loaded it on his ass, and brought it to his mill. When he returned with a second load to his mill, he found scarcely a vestige of the first load remaining. Thinking the corn had been stolen, he kept watch, intending to catch the supposed thief in case he returned. But suddenly, to his great astonishment, hosts of Field Voles appeared, which immediately set to work to carry off the second load.

Recollecting the experiences of 1866, the principal Thessalian landowners immediately formed a committee to take measures against the voles as soon as their appearance in large numbers was reported. The president and most active member was M. Anastasiades, the manager of the large estates of M. Stafanovic. It was this M. Stafanovic who telegraphed from his residence at Pera, Constantinople, to Prof. Pasteur in Paris, inquiring whether he happened to possess a microbe which could be used for the destruction of the Field Voles. Prof. Pasteur telegraphed back that he should apply to me, for I had discovered a microbe which would destroy them. This reply was forwarded to the Government at Athens, and I have no doubt that the recommendation of the distinguished French bacteriologist had some influence in deciding the Greek Government to invite me to come to Greece with an assistant.

The great danger which threatened the Thessalian harvest was at once appreciated to its full extent by the Greek Government. This year the harvest promised to be an uncommonly good one. The amount at stake was estimated at from 40,000,000 to 50,000,000 francs. The Government immediately appointed a number of specialists to deal with the voles. These were M. Kyriakos, Sub-director of the Agricultural School at Athens; M. Ambelikopulos, Professor at the Normal School at Larissa; and M. Muratoglos, Professor at the Normal School at Almiro.

These gentlemen, accompanied by a number of pupils, visited the localities which were most severely threatened in the neighbourhood of Velestino and Larissa, and began to deal with the voles in the middle of May. The measures taken by these gentlemen previous to our arrival consisted in flooding the infested arable land with water, in scattering poisonous food, in sinking large tin vessels in the ground, and in pouring bisulphide of carbon (*Schwefelkohlenstoff*) into the "runs." But the flooding of the "runs" could only be carried out in a few places, partly for want of water, and partly because the local conditions were unsuitable. However, what the Committee were able to do was attended with good results. They reported that the bisulphide of carbon had succeeded well. In using it, the first step taken was to close up all the openings to a colony. Next day all the newly-opened holes but one were closed. The nozzle of an injection-tube was inserted into this one open hole, and a measured quantity of bisulphide of carbon, of about 10 cm., was forced into the "run" by a special apparatus. It was asserted that all the voles inside were killed in a few seconds by the vapour diffusing itself through the "runs." The Committee informed us that they had found a great many dead mice on digging up a burrow that had been thus treated. But the use of bisulphide of carbon was also only possible in certain suitable localities, that is, only where the holes in the ground were visible; for the fallow-fields were covered almost everywhere with great thistles almost as tall as a man, and the voles prefer to make their holes under cover of these. Again, if all the holes of a colony are not closed before the injection of the bisulphide of carbon, the vapour, and probably the animals too, will escape through the openings which have been left. At the time of our arrival the first supply of bisulphide of carbon furnished by the Government had been exhausted, and it was very difficult to obtain the large supplies which were ordered from France *viâ* Marseilles, for no vessel would carry on board a large quantity of this dangerously-inflammable substance. Moreover, the use of bisulphide of carbon became inadvisable about the end of April, because at this time of year the heavy soil had already become parched and cracked by the sun, and the vapour escaped through the fissures, without doing any execution in the "runs." As the heat increased, too, there was much loss of material. Bisulphide of carbon boils at 46.5° C. In the open

fields, and exposed to the sun, the vessels containing the chemicals were easily heated above the boiling-point. The inconvenience to the workmen, and the danger of fire, increased in proportion to the temperature. The scattering of poison frequently resulted in the poisoning of sheep, so that the country people were full of distrust of this method. The nett result of the measures already adopted was to be estimated at next to nothing in view of the swarms of voles existing, and the extent of territory infested.

My arrival was awaited with mingled feelings. Many, especially the owners of large estates, hoped that a thorough success might be attained through the bacillus which I had discovered. Others, and particularly the specialists commissioned by the Government, did not entertain much hope of the success of the bacteriological method, because, however satisfactory might be the results obtained in the laboratory, the experiment had not yet been tried in the open air. An unfavourable opinion had been formed of my undertaking owing to the failure of the bacteriological method in contending with the Australian rabbit-plague.

No time was lost in carrying out the new method. Mice abounded everywhere in the Plain of Larissa. By the advice of Dr. Pampoukis, the land selected for the initiatory experiments belonged to intelligent Greek owners of large estates, because we could rely upon them to carry out my plans strictly. The country people were mostly indifferent about the vole-plague. The Turkish inhabitants of the country regarded it as a visitation of God, which must be submitted to. In general they were disinclined to try any remedial measures. The notions of the Turks were well illustrated by their sending messengers to Mecca to fetch holy water, with which to sprinkle the fields, and thus, as they supposed, exorcise the mice. The peasants were mostly very indolent, and required some pressure to make them work. The Prefect of Larissa, M. Kleomenes, gave us the greatest assistance in every way, and put soldiers at our disposal, who were sent to the villages and compelled the peasants to take the needful measures. The requisition of a military escort for our personal safety, which seemed somewhat threatened by the reports published in the German papers of the appearance of mounted bands of brigands in Thessaly, proved quite unnecessary. The news in the German papers was either incorrect or greatly exaggerated, as was also the case with similar news in many

Greek papers. It was most likely designed to throw difficulties in the way of the Government before the impending election. The only item of truth in the whole affair was greatly worked up by the Opposition journals, and what gave apparent countenance to the reports was that shortly before our arrival a number of prisoners had escaped from the prison at Larissa. In order to sustain their lives these people had committed some depredations in the neighbourhood of Larissa, and had consequently caused a certain amount of uneasiness among the inhabitants. At last they were forced to take to flight together. Some surrendered, others were soon recaptured by the soldiers sent in pursuit of them; others again fled across the Macedonian frontier to the mountains. During our excursions to the different districts infested by the voles, I never felt any insecurity; we had always an under officer in the carriage with us, and we were always accompanied by two mounted and armed retainers of the owner of the estate we were visiting. But these people attended not so much to protect us, as to be ready to carry news quickly to places at a distance.

My plan for the practical employment of the bacillus was to dip bits of dry bread (white bread, if possible), about as large as a finger-joint, into the fluid charged with bacilli, and to put a bit of this bread into each mouse-hole. If the animals ate the bread they would certainly die, as in the case of the laboratory experiments. The disease would be communicated to those which had not eaten the infected bread partly by the bacilli in the excreta of those affected but still living, and partly by their devouring the bodies of those which died of "mouse-typhus." The mode of carrying out these measures was very simple. Making Larissa our head-quarters, we made daily excursions to places in the neighbourhood, taking with us the large tin vessels containing the fluid, and about 100 phials of pure culture on "Agar-Agar." As soon as we had about reached the middle of the district we proposed to deal with, a quantity of the fluid was poured into a pot, which the owner willingly gave us, and the contents of some "Agar-tubes" were added to it, that the fluid might be as strongly charged with bacilli as possible. The soldiers then summoned the peasants from the neighbouring villages, telling them to bring slices of bread with them, to this central spot, each bringing a sufficient quantity of bread with him

for the piece of land on which he worked in a wicker basket. One after another went to the pot, and poured the contents of his basket into the fluid. The pieces of bread were then dipped down, and after they had been sufficiently soaked, were taken out of the pot with the hands, and put back into the basket. In order to relieve the peasants of the doubts which they expressed whether the prepared bread might not be poisonous to their sheep, the animals belonging to the establishment,—fowls, pigeons, dogs, pigs, horses, donkeys, sheep, and goats,—were all fed before their eyes with prepared pieces of bread; indeed, some of the staff who divided the bread among the peasants ate pieces themselves in their presence, to show that it was harmless also to man. It is true I had made no previous experiments upon man, with the bacillus, but only expressed my opinion that I considered it improbable that any harm could result from the bacillus. But this declaration was quite sufficient to induce my companions, who were most zealous for the success of the undertaking, to try the experiment for themselves of eating some of the bread without more ado, in order to tranquillise the peasants. In short, all of us who had to dose the bread, as well as the peasants who had to divide it, served as objects of experiment; for disinfecting our hands, and the baskets used to carry the bread was, of course, out of the question.

All these experiments on men and animals proved (as I had expected from the result of my former trials) that, so far as they are concerned, the bacillus is wholly innocuous; it is operative only on the alimentary system of the House Mouse and Field Vole. After the peasants had been taught and shown what was to be done, they went as they were ordered to their fields, accompanied by soldiers, and carried out their instructions faithfully. We ourselves selected suitable posts for observation in different places, and applied the method there, in both the cultivated and fallow-fields. In this manner we succeeded, in a few days, in disseminating the prepared bread over the whole plain, north, east, and west of Larissa. At different places dozens of voles were inoculated with the pure culture by subcutaneous injection, and were liberated in the fields that they might spread the disease in the way already explained.

I cannot sufficiently express my grateful recognition of the hospitable reception which we received everywhere from the

owners of the estates, and their stewards, and of the energy with which they urged the people to carry out the method practically. I am especially grateful to the owner of Bakrena, M. Kalampoulos, and his representative, M. Elias; the owners of the estates of Nechali, Demetriades, and Skaliora; and, above all, to the director of the Stefanovic estates (Chassambali, Metesseli, Amarlar, Chadsimustafa), M. Anastassiades, who unweariedly exerted himself to ensure the measures which I proposed being conscientiously carried out.

In a few days the supply of cultivated fluid and the pure culture on "Agar" was exhausted. But after the method became known, those of the inhabitants who did not live too far from Larissa flocked to the town to obtain infected bread to take to their fields. This obliged us at once to recommence our preparation of the cultivated fluid. The Government Commissioners shared in the work. M. Ambelikopulos, in particular, took care to acquaint himself with all the details, so that he might be able to extend the use of the method through all Thessaly after our departure.

It was necessary to make a reliable experiment on a large scale in Thessaly with the fluid prepared at the house of M. Anastassiades. I entrusted this work to my assistant, Dr. Abel, there being doubtless a great abundance of field mice in the neighbourhood of Velestino, as we afterwards found to be the case when we visited the fields; and consequently this district seemed particularly suitable. I therefore sent Dr. Abel there with a supply of the freshly prepared material, and directed him to select a suitable field, to dig a ditch round it, and to sprinkle it with the prepared bread. Dr. Abel succeeded in discovering, through the friendly aid of M. Maire, of Velestino, and his assistant, M. Jourdan, a wheat-field, about four hectares in extent, which was riddled with mouse-holes like a sieve. In order to isolate this field from its surroundings as far as possible, he had a furrow ploughed all round it, and immediately deepened this into a ditch. At the same time all the holes were charged with bread. By this method the following results were obtained:—After a few days news was received from all quarters that the bread which had been put into the holes had disappeared, and therefore it was in the highest degree probable that the voles had eaten it. If this were the case the result would be very satis-

factory, according to the experiments made on a small scale. From the first I awaited the result with great anxiety. I had not thought it very likely that the voles would eat the bread when they were surrounded with the tenderest grasses. On this account I expressed the opinion in the article already referred to ('Centralblatt für Bakteriologie und Parasitenkunde,' Band xi. p. 129) that Spring and Autumn were the most favourable seasons for attacking the voles by my method; that is, at seasons when their natural food was not over abundant. In Thessaly this period was long past, and the finest and tenderest grass was growing everywhere. The corn had already attained a height of half a metre and upwards. I was therefore all the more agreeably surprised when the news reached us that the bread had everywhere disappeared from the holes, even in the midst of the corn-fields. We could not expect final results until the expiration of at least four weeks, but after about nine days some of the consequences became apparent. In company with Dr. Pampoukis, who had been deputed by the Government to assist us, and who had made things smooth for us everywhere, and with the landed proprietors who were most interested, we made a tour of inspection at the expiration of the time mentioned to the places where we had ourselves applied the method, as well as to some where the proprietors assured us it had been undoubtedly carried out by the peasants. In Bakrena, where we had commenced the trial nine days previously, the devastations in the fields had ceased for two or three days. We were able to ascertain with certainty that freshly-eaten corn was no longer found in the holes; what was actually found was at least two days old. Besides, we saw no newly-opened mouse-holes. At several places all the holes had, at my request, been trodden down the evening previous to our visit. Not one of them had been reopened, as was otherwise invariably the case under similar circumstances. Several dead voles had been found by the peasants, but unfortunately they had not been preserved. It was just the same at Nechali and Amarlar. A number of the burrows were dug up; many were quite empty, and in others dead young were found, partly eaten. At other places dead voles were found just outside the burrows, or sticking in the holes; we also found half-dead ones moving about outside the holes in broad noonday, which they had never been seen to do at other times. This discovery of dead

and dying voles outside the holes in broad daylight explained the reason why we seldom found dead ones when the burrows were opened. It seems that when the animals find themselves seriously ill they feel the need of fresh air; they abandon their holes and "runs," and are immediately pounced upon and devoured by the numerous mouse-eating birds in the neighbourhood. A number of dead and half-dead voles were taken back to Larissa, and were there examined; they all exhibited the pathological and anatomical changes of mouse-typhus, and all their organs, especially the liver and spleen, contained abundance of characteristic bacilli. Thus we conclusively proved the infection of the voles by means of the prepared bread. The method had satisfactorily borne the test of practical application. It was no longer necessary for me to remain in Thessaly, as I could entrust the further carrying out of the method to Dr. Pampoukis at Athens, and M. Ambelikopulos at Larissa. Dr. Pampoukis announced the satisfactory result of the experiment in a despatch forwarded to Athens. The Mayor of Larissa, M. Asteriades, gave a dinner in our honour, and expressed his pleasure at the success of our undertaking; and the Prefect, M. Kleomenes, who was present, also expressed his appreciation of the value of the new method. The President of the Committee, M. Anastasiades, was so convinced of the result that he telegraphed to countermand the further shipment of large quantities of bisulphide of carbon, which were lying at Marseilles to be forwarded to Thessaly. The Government Commissioners also recognised the success of the method.

After this we returned to Athens. I personally reported to his Excellency the Prime Minister, M. Konstantopulos, respecting the fortunate results of the experiment. I laid stress upon the pressing necessity for carrying out the method without delay throughout the whole of Thessaly. I expressed my confident opinion that there would be a very good harvest this year from the Thessalian corn-lands, if they were saved from destruction by the voles through a speedy and widespread application of my method, which could easily be carried out; and finally expressed my desire that the Government would give Dr. Pampoakis, at Athens, and M. Ambellikopulos, at Larissa, full powers and means to carry out the method in the way which I had shown them. His Excellency the Prime Minister then expressed to me the thanks of the Government, in the presence of M. Gennadius,

the Director of the Agricultural Department of the Ministry, for having accepted the invitation, and for having successfully carried out my method in Thessaly for the benefit of Greece. His Excellency, M. Trikoupis, who had paid special attention to the Thessalian vole-plague, and had learnt with great interest the particulars of my method, its easy application, cheapness, and effectiveness, also expressed his conviction, during a visit which we paid him, that we had rendered Thessaly and Greece a great service by practically conducting this novel undertaking. During the two following days which we were able to spend in Athens before our return to Germany, several telegrams were received from Thessaly, setting forth beyond doubt the successful results of the experiment from day to day. The Greek journals of all parties were unanimous in expressing their approval of my method, and their gratitude. Moreover, M. Gennadius, the Director of the Agricultural Department, and all the scientists connected with the Pathological Institute, who had energetically aided in the preliminary arrangements, expressed their pleasure at the complete success of the undertaking during a banquet which in the most friendly manner they gave in our honour.

We made our return journey *via* Constantinople. Shortly after our arrival, I received a telegram from MM. Anastassiades and Kyriakos, giving information of the latest results of the experiment, as shown by the discovery of great numbers of dead and dying mice, and expressing their gratitude and good wishes.

On my return to Greifswald, I received no further news for a time. As I said before, the complete results could not be expected to manifest themselves for some weeks after the commencement of the practical application of the method. On May 26th I received, to my great satisfaction, the following despatch from the President of the Vole Committee at Larissa, "Résultats excellents partout, pays reconnaissant à vous.—Anastassiades."

On May 28th, I received a letter, dated on the 22nd, from M. Ambelikopulos at Volos, in which he expressed himself as follows:—"Votre méthode marche très bien, elle nous a donné des résultats splendides; à Velestino où nous avons fait un essai, on a trouvé beaucoup mais beaucoup de campagnols morts et assez de mangés dans la nuque."

Thus the hopes which I entertained when I discovered the

bacillus, that it might prove of great importance in counteracting the damage, amounting to many millions, caused by voles in several countries of Europe, have been fully and speedily confirmed. We now possess, in the *Bacillus typhi murium*, a micro-organism which will infallibly kill these destructive rodents. The bacillus can be used in practice with the greatest ease, as it injures no other animal. It consequently fulfils the most comprehensive requirements necessary in a method for destroying voles. For the first time an injurious animal in Thessaly has been successfully and scientifically got rid of. Bacteriological science has again proved its vast practical importance, and has fully justified its claim to be studied and cultivated to the utmost extent.

NOTES AND QUERIES.

MAMMALIA.

The Polecat in Pembrokeshire.—With reference to the note which appeared under this heading (p. 264), and to the replies thereto (p. 310), Mr. E. Cambridge Phillips writes that it was the Marten, and not the Polecat, which he intended to characterise as extinct in Pembrokeshire. His letter dated "Brecon, July 25th" reached us too late for insertion in the last number.—ED.

Young Squirrels.—I have just been reading Mr. Blagg's interesting remarks about Squirrels in 'The Zoologist' for March, 1891 (p. 101), and should like to mention that in 1887 I found young Squirrels in the woods near Oxhey, not far from Harrow-on-the-Hill, on May 28th. One lot of three, which were in a "drey," had their eyes open; but I found a much younger lot in a hole in a tree on the same day. In this county (Wexford), in 1891, I was shown, on August 14th, two quite small Squirrels which had recently fallen out of their "drey." They were still living when I saw them, but were so young that their eyes were not yet opened. These instances seem to support Bell's testimony as to the date of birth of young Squirrels rather than that of Mr. Blagg.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

[In our editorial note, however, to Mr. Blagg's communication, the reader will observe that we have given four dates in March and April, which support his contention that the Squirrel has young long before June, the date assigned by Bell.—ED.]

Barbastelle in Gloucestershire.—A female specimen of this bat was sent me by Mr. C. Watkins, of Painswick, it having flown into the room of a house in Stroud during the first week in August.—H. CHARBONNIER (7, Triangle, Clifton, Bristol).

[The only Bats mentioned in Mr. Witchell's lately published 'Fauna of Gloucestershire,' of which we hope shortly to give a notice, are the Noctule, Pipistrelle, Natterer's Bat, Whiskered, Long-eared, and the two Horseshoe Bats. It is curious that the additional species now recorded should have turned up in the town in which the author of the 'Fauna' resides.—ED.]

Hairy-armed Bat in Yorkshire.—During the months of May and June, 1890, I obtained several specimens of the Hairy-armed Bat, *Vesperugo leisleri*, which were shot on the wing at Mexborough. One of the specimens is now in the British Museum.—H. CHARBONNIER (7, Triangle, Clifton, Bristol).

[It appears from Messrs. Clarke and Roebuck's 'Handbook of the Vertebrate Fauna of Yorkshire,' that only one occurrence of this bat in that county was known to them at the date of publication, 1881. It would be of interest if our correspondent would point out in what respects the specimens procured by him differ from the young of the Noctule with which *V. leisleri* has before now been confounded.—ED.]

Black Variety of the Water Vole in Northumberland.—It appears from Messrs. Aplin and Macpherson's paper on this variety of the Water Vole (p. 247) that it has not yet been reported from Northumberland. I spent a fortnight last May at Harbottle, in Upper Coquetdale. Whilst walking by the river one evening with a keeper, on the look out for an Otter, our attention was attracted by a Water Rat. Without any remark on my part, my companion inquired, "Do you see Black Water Rats in Nottinghamshire?" On my informing him that occasionally I had seen them, he told me that he frequently saw them when fly-fishing in the Coquet. After that I kept a look out, and was rewarded by seeing a very black specimen at a place called Shilmoor, several miles higher up the river, a day or two later. This specimen dived into a deep pool of the peat-coloured water, and I was much struck by its instantaneous disappearance from sight, though the water was clear, the dark colour of the fur making the animal invisible when only a few inches under water.—F. B. WHITLOCK (Beeston, Notts).

Bank Vole breeding in Confinement.—At the end of last March I received about a dozen specimens of the Bank Vole, *Arvicola glareolus*, from Haresfoot Farm, near Berkhamstead. They were found by the labourers in a large nest made of dry grass in a heap of mangels. There were a good many of them, and those sent me were caught alive by the men

in their hands. I had a cage made for them, after the fashion of, but larger than, the common dormouse-cages, divided into three parts—one for sleeping, another for food, with, at the end, a revolving wheel or treadmill. Into this I put five of the voles. They are fed with corn, apples, carrots, potato, bread, biscuit, and (by advice read in 'The Zoologist') gooseberries. They are well supplied with water. On the 23rd July I found two blind, hairless young ones, evidently just born, lying outside the cage, underneath the wheel. I put one into the sleeping compartment, where I caught sight of another. I gave strict orders that this part of the cage was not to be disturbed. When, however, the voles were shut into it, to permit of cleaning the other parts, the little girl who attends to them several times heard sounds of fighting, and on the morning of the 26th a vole ran out bleeding at the head. He was followed by the mother, with a young one in her mouth. Our idea is that the wounded vole had attacked the young ones, and had been bitten by the mother. He was found dead the next day. On the 2nd August (when the young ones were eleven days old) one was seen running about. After a fortnight (the 6th August) I examined the sleeping-place, and found three little creatures fully covered with fur, active enough, and able to feed themselves. The mother is very jealous of her young ones being seen, and it is amusing to notice how she seizes a youngster, and hustles it off to the sleeping apartment if she thinks it is being looked at. Once or twice when a little one has ventured into the wheel, she has not only trundled it back, but has (apparently) administered correction by shaking and thumping it on the floor as she carries it to the inner compartment. All the little creatures appear in excellent health, which I attribute mainly to the wheel. This enables them to get as much exercise as they please, and they never seem to tire of it.—T. VAUGHAN ROBERTS (Verulam House, Watford).

BIRDS.

Summer Birds kept through the Winter.—It may be of interest to mention that a Norfolk naturalist, Mr. Lowne, of Great Yarmouth, has successfully kept a Swallow, a Wheatear, a Greater Whitethroat, a Blackcap, and a Pied Wagtail through the winter. On the 22nd July they were in as good health as if they had just come over the channel, and the Swallow is reported to be "singing all day." My brother and I have had Hedge-sparrows, which are not easy birds to keep, for some months, and I have a Brambling which has assumed the summer plumage and a black chin.—J. H. GURNEY (Northrepps, Norwich).

[An article on the treatment of Swallows and Swifts in captivity was published in 'The Zoologist,' 1887, p. 372. Blackcaps and Whitethroats have been successfully kept through the winter by the well-known zoological artist, Mr. Joseph Wolf, and visitors to the Zoological Gardens will doubtless

remember the Pied Wagtails which lived so long in the Aviary at the end of the Fish House.—ED.]

Young of Red-necked Grebe on the Kingsbridge Estuary in July.—An immature bird of this species, *Podiceps rubricollis*, was observed during the month of July haunting the vicinity of the new bridge, in company with a flock of tame ducks; much to my regret, it was shot on August 1st, and brought to me. The specimen shows the peculiar black and white stripes about the face and cervical region, whilst the lower neck and upper part of the breast are of a warm chestnut colour. I am much inclined to believe this bird was bred in the neighbouring Slapton Ley, though it has been hitherto said never to have bred in Great Britain.—EDMUND A. S. ELLIOTT (Kingsbridge, Devon).

Birds of Derbyshire.—I venture to appeal to the readers of 'The Zoologist' for notes respecting Derbyshire birds in general. A reference to the current journals on Natural History will show the very scanty material contributed respecting the county at the present day. Information, especially concerning local specimens in museums and collections, is greatly desired. Lists of the commonest species would be welcome, as well as the reference to old works on Derbyshire containing any information referring to the avifauna of the county. Local lists, especially relating to water-fowl, from the country north of Chesterfield, and on the Cheshire border in the north and north-west, would be especially welcome, and would be duly acknowledged.—F. B. WHITLOCK (Beeston, Notts).

[The following works should be consulted:—*Leigh*, Nat. Hist. Lancashire, Cheshire, and the Peak in Derbyshire, folio, 1700. *Glover*, Sketch of the Zoology of Derbyshire (Birds), in Hist. Co. Derby, 1829, vol. i. pp. 139—166. *Briggs*, Birds of Melbourne, Derbyshire, 'Zoologist,' 1849 and 1850 (several articles). *Pullen*, Birds of Derby and Neighbourhood, in 'The Young Naturalist,' vol. v. pp. 30—34, published at Hartlepool, 1884. *Whitlock*, Birds of Derbyshire Peak, 'Naturalist,' 1886, pp. 130—132. Perhaps some of our readers may be able to supply other references that may be useful.—ED.]

Cuckoo in Grey Wagtail's Nest.—In Messrs. D'Urban and Mathew's recently published 'Birds of Devon,' will be found an account (p. 40) of a pair of Grey Wagtails nesting in the wall of the town reservoir at Kingsbridge for several years until the spring of 1890, when they were ousted by a pair of Pied Wagtails. In the spring of 1891 a pair of Grey Wagtails frequented the precincts of the reservoir for some days, but as the Pied Wagtails had already possession of their favourite hole, the former left. This year a pair of Grey Wagtails again appeared rather late in the season, and commenced to build in a hole in the opposite wall of the reservoir to the original nesting-place, and had the bad luck to attract the attention of a

Cuckoo, which deposited an egg in the nest. The young Cuckoo could subsequently be seen in the nest very plainly; but the foster-parents were shy of feeding it whilst being watched. Eventually the young Cuckoo fell out of the nest into the water, and was drowned.—EDMUND A. S. ELLIOTT (Kingsbridge, Devon).

Blue-headed Wagtail and Little Owl in Oxfordshire.—As the publication of my report on Oxfordshire Ornithology for 1891 will be delayed, I should like to place upon record the occurrence of two birds which are new to the county list. Mr. W. Warde Fowler wrote me word that on the 29th April, 1891, he saw among a company of *Motacilla raii* in Port Meadow, Oxford, one which he “had little doubt was *M. flava*; dark head, and back darker than *M. raii*, and altogether different from the rest, including females.” On the 2nd September in the same year, I saw close to the same spot a Wagtail of this species. I got within three yards of it, and watched it for five minutes as it caught flies in the shelter from the wind afforded by some long grass and rank weeds. It was over the moult, but the head had a decidedly grey tinge as compared with the back, and was also darker than the latter; white eye-streak conspicuous. It is highly probable that the Blue-headed Wagtail bred there in the summer. A Little Owl (*Athene noctua*), which I have examined, was caught in a rabbit-trap in a bank near Thame, and sent for preservation on the 11th November, 1891.—O. V. APLIN (Bloxham, Banbury, Oxon).

The Marsh Warbler in Notts.—I feel convinced that, three years ago, on 2nd or 3rd July, I heard a Marsh Warbler singing in an osier-bed near Nottingham. I was then living at Attenborough, and had started to walk down the Midland Railway from Beeston Station, where I had arrived by the midnight train. Attenborough is about a mile and a half from Beeston, and midway between the two places a large osier-bed extends from the Trent to the railway, covering about nine acres. The night was close; during the day a heavy thunderstorm had occurred, and everywhere was reeking with moisture. On nearing the osier-bed I noticed that both the Sedge and Reed Warblers were singing, but the song of another bird was so different to anything I had heard before, that I stopped to listen as soon as it commenced. It is always difficult to write down the song of any bird on paper, but the song I was listening to appeared to be most like that of the Nightingale, without the long-drawn plaintive notes of the latter bird, and with more of a ripple about it, sometimes not unlike that of the Sky Lark, but with occasional harsh notes thrown in. It was far more musical than that of the Reed Warbler, and not so hurriedly uttered as that of the Sedge Warbler, as though the bird was conscious of its sweeter strains. It must be remembered that both these species were singing close at hand; I had therefore excellent opportunities for comparison. The bird appeared to be

singing in a part of the osier-bed about 150 yards from where I stood. Unfortunately a heavy luggage-train soon came by and silenced my bird, which did not resume its song whilst I was within earshot. The Sedge and Reed Warblers, however, scorned to be interrupted. I was unable to revisit the spot for more than ten days, and so did not hear the warble again. In the two following years the osiers were cut in the spring, so that there has been no cover for the bird, even if it has returned to its previous haunt. In his recently published notes (p. 303), Mr. Fowler speaks of the Reed Warbler as "lethargic." I can hardly agree with him there. I consider it very animated, and even pugnacious at pairing time. When singing, too, the Reed Warbler, like the Marsh Warbler, shows the bright yellow interior of the bill "as he stretches it wide, with head erect." He is a mimic also, and on hearing a Reed Warbler singing so much like a Sedge Warbler, I shot it, thinking I had found the true Marsh Warbler at last. I had been reading Bree's article a day or two before. I have noted the "*utic-utic*" notes of the Whinchat in the song of both the Sedge and Reed Warblers; indeed, the former bird frequently uses them as a sort of prelude. Writing on the Sedge Warbler, Mr. Fowler remarks that on one occasion he saw one "dance up into the air like a Whitethroat, and descend something after the manner of a Tree Pipit." I have frequently witnessed this, especially just after the birds have arrived; sometimes they sway themselves about in the air rather like a Greenfinch does. — F. B. WHITLOCK (Beeston, Notts).

Grasshopper Warbler in S.W. Scotland.—This is a shy, retiring little bird, which, though not really rare in S.W. Scotland, is very seldom heard and still more seldom seen, and the finding of its nest by any except those who possess the key to its habits a rare accident. This season some of the birdnesting boys seem to have stumbled on the bird somehow, and no less than three different juveniles brought me eggs of this bird for identification. These had all been taken within a short distance of Dumfries. — ROBERT SERVICE (Maxwelltown, Dumfries).

Late Nesting of the Lapwing.—The breeding time of these birds last spring was brought to a rather abrupt conclusion, owing to the dryness and coldness that prevailed then. In June they seemed to have actually commenced to nest again, and during the last week of July it was no uncommon thing to find young birds newly emerged from the shell running about in the soft downy plumage. In ordinary seasons, of course, Lapwings in the youngest stages are regularly found so late in the season as this in places where the eggs have been taken early in the spring. But this year, in the cases I am referring to, the birds seem to have been undisturbed by anything, except the unfavourable weather. In this connection I may be allowed to mention an interesting fact that can be vouched for. No less

than 120 dozen of Lapwings' eggs were gathered in a single day on a certain Stewartry estate by the gamekeepers and their assistants.—ROBERT SERVICE (Maxwelltown, Dumfries).

Ruddy Sheldrakes in Ireland.—The end of June and the beginning of July last were marked by the occurrence of several Ruddy Sheldrakes in flocks in Ireland, and one in Scotland. The 'Irish Sportsman' of July 23rd contains information as to a flock of seven on the Co. Dublin coast, two of which had reached Mr. Williams during the first week in July, as he then informed me. In 'The Zoologist' for August (p. 311) Mr. Steele Elliott mentions a Ruddy Sheldrake, which was shot towards the end of June out of a flock of twenty in Co. Donegal. On the 25th July, Mr. Levinge, of Knockdrin Castle, Co. Westmeath, wrote to tell me that there were two strange birds on a neighbouring lake, and, on consulting Yarrell's 'British Birds,' he subsequently told me that they were "undoubtedly Ruddy Sheldrakes." We learn, from 'The Field' of Aug. 6th, that six or eight of this species took up their quarters in July in a small bay west of the village of Findhorn, on the Moray Firth, and that one of them was shot. Referring to 'The Zoologist,' 1887, p. 25, we find that in June and July, 1886, three separate parties of Ruddy Sheldrakes occurred at Kinsale, near Banteer, in the north of Co. Cork, and on the Shannon. Earlier occurrences of this species in Ireland took place in Co. Wicklow, July, 1847; in Co. Kerry, August 17th, 1869; and in Co. Waterford, March, 1892. Such repeated appearances of the Ruddy Sheldrake in summer, simultaneously in different places in 1886 and 1892, and in flocks, seem to preclude the idea of their being all escaped birds, and to indicate that this species occasionally migrates at that season to the British Isles. As its breeding range lies so far south as the basins of the Mediterranean and Euxine, and Central Asia, these summer visits need not astonish us so much as would be the case with other Anseres that go much further north to breed. With reference to the flock of supposed Wild Geese in Westmeath, mentioned by Mrs. Battersby (p. 310), Col. Malone, who saw them, writes to me:—"The keeper and I were on the lake (Lough Iron) about 11.30, on the 4th July, when I saw a large flock of birds coming towards the lake from the east. They came on to within 150 or 200 yards of us, when they wheeled and flew off in a northerly direction: they were flying rather low, about seventy yards, I should say, from the ground. I thought they looked to have slightly shorter necks than the geese one usually sees, and were a little darker in plumage. They made a cry that reminded me of the large horse gull (Lesser Black-back). There were either forty-seven or forty-eight of them. They were the same size as the geese one sees in winter." Mr. H. L. Jameson informs me that on the morning of the 31st July six or seven supposed Wild Geese were seen flying south-west by John Hanlon, farmer, of Drumbanagher, Co. Armagh.

Though Colonel Malone's description does not altogether agree as to colour and size with that of the Ruddy Sheldrake, yet, as the size and hue of birds on the wing may be mistaken, and as other flocks made their appearance in Ireland about the same time (at a season when Wild Geese are in the arctic regions), it is open to conjecture that the two last-mentioned flocks may have been Ruddy Sheldrakes. It will be interesting to note if the species has occurred this summer elsewhere in the British Islands.—R. J. USSHER (Cappagh, Co. Waterford).

[On the 28th March last a Ruddy Sheldrake made its appearance on a piece of water at Burley Manor, Ringwood, Hants, and was described in a letter to the 'Times,' dated "Burley Manor, April 12th," by Mr. W. C. Esdaile, who did all he could to protect it while it remained in his neighbourhood. In 'The Field' of August 6th, Mr. F. Menteith Ogilvie announced the recent occurrence of another bird of this species near Aldeburgh, Suffolk; and the Rev. H. A. Macpherson, in 'The Field' of August 13th, "reported that a third had been shot in Cumberland on July 20th."—ED.]

A Tame Golden Eagle.—I promised to send you some account of the Eagle which our former under-keeper took from the nest near here. He is now the landlord of the hotel at Luib, and has still the bird in his stable. It is a Golden Eagle, I think a hen bird, and nearly, if not quite, full grown. It is fairly tame, and will sit on his hand; but he does not carry it often so, partly because he is a busy man, and partly because he is afraid of its losing its balance, and regaining it in a manner extremely painful. It has not been pinioned, nor had any of its feathers touched, and can fly very well. It escaped the other day, and flew for about half a mile, but settled on the ground, and allowed him to come up and catch it again. I think he wants to get rid of it, as his wife is afraid it will eat or injure her first-born, who has just reached that age when he can run about by himself. The owner has had one or two people enquiring about the bird, and has been offered a life-membership of the Zoological Society, if he will present it to the Gardens; but he does not think that good enough, as he can never derive any of the advantages except writing F. Z. S. after his name. He told me the story of its capture; it was the only one in the nest, and he was lowered by a rope. He found it surrounded by the remains of about thirty grouse, seven lambs, hares and rabbits in abundance, and rats, mice, and moles.—FRANCIS HEAD (Luib Hotel, Perthshire).

Wild Hybrid Birds.—M. André Suchetet continues his observations under the title "*Les oiseaux hybrides rencontrés à l'état sauvage.*" The third part of his essay (270 pages), dealing with the Passeres, has just appeared in the '*Mémoires de la Société Zoologique de France,*' and further parts will complete the series. These published researches of M. Suchetet

are of great interest to ornithologists, embodying as they do a great number of facts collected from various sources. We may especially direct attention to the pages relating to hybrids between *Turdus merula* and *Turdus musicus* (pp. 365—373), since this subject has on several occasions been dealt with in communications to this Journal.

REPTILES.

Results of Viper-bite. — As cases of poisoning from the bite of venomous reptiles are happily rare in this country, it may prove interesting to some of your readers if I relate my experience on this matter. About a month ago I caught two snakes at Bickleigh, near Plymouth, and whilst examining one it “bit” or rather struck me on the right thumb. I immediately sucked the puncture (it could not be called a wound), which bled a little, and tried to make light of the matter. A livid patch soon formed round the point, and the hand and arm commenced to swell. In a quarter of an hour I was unable to hold anything, and almost in a fainting condition. The first symptom (apart from the swelling) was a peculiar taste and a sensation of swelling in the teeth, then the tongue commenced to swell and became so large that I could hardly move it, my eyes seemed ready to start from their sockets. In half an hour a terrible vomiting commenced, preceded by excruciating pains in the stomach and heart, and continued with the pains altogether for nine hours, every drop of liquid being ejected almost as soon as swallowed. There was also violent purging and complete suppression of urine. There was practically no pain in the arm. Altogether the painful symptoms lasted for about nine hours. I did not lose consciousness at any time. The arm continued to swell for two days, and then it was nearly as large as my leg. After this the swelling subsided, but the arm did not return to its normal size until twelve days after the accident. After the swelling had gone I suffered very much from rheumatical pains, and, in fact, do so now, and the digestion was also very much impaired. The Viper is a male, a little more than two feet long, and about one inch in diameter at the largest part. Colour, a dull yellowish brown on the upper side, with a zigzag black line running down the whole length. On the under side it is nearly black except at head, where it is pale yellow. I have kept the reptile now for nearly five weeks, and, although well supplied with small frogs, &c., it has not eaten anything, and seems as lively as ever.—W. A. RUDGE (Plymouth), in *Nature*.

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THE CAUSE OF GROUSE-DISEASE, AS EXPLAINED BY DR. KLEIN, F.R.S.

FOR the volume on this subject recently published by Dr. Klein* we have not been altogether unprepared. It will be in the recollection of our readers that in 1887 Dr. Klein, at the request of the Editor of 'The Field,' undertook to investigate this subject, and proceeded for that purpose to Scotland, where he was enabled to examine, immediately they were found, birds of all ages which had died from the so-called grouse-disease.

The result of the investigations then made was published in a Report (Zool. 1887, pp. 327—337), which may be said to have paved the way for the more comprehensive and illustrated treatise now before us.

From time to time various theories have been put forth to account for the disease, but none have been supported by evidence sufficient to warrant their unqualified acceptance. Dr. Klein examines the views of five different observers by way of introduction to his subject. The late Dr. Cobbold, a high authority on the nature and development of parasites, is first quoted as the founder of a theory of grouse-disease. In Dr. Cobbold's opinion, the ailment was due to parasitic invasion—or, in other words, to the infestation of the birds by worm

* 'The Etiology and Pathology of Grouse Disease, Fowl Enteritis, and some other Diseases affecting Birds.' By E. Klein, M.D., F.R.S. With fifty-three illustrations. 8vo, pp. 140. London: Macmillan & Co.

parasites. A round worm (or nematoid) he believed to be the cause of the disease. Such a worm is constantly found in grouse, while tape-worms were also credited with helping a fatal result. But the parasitic theory is disposed of on the simple ground that hardly a grouse is found to be free from worms in its digestive system; and perfectly healthy birds (using the word "healthy" in the ordinary sense of the term) are found to possess both forms of worms independently of any symptoms of grouse-disease. Both Mr. Colquhoun and Dr. Macdonald in turn deal with secondary causes of the disease rather than with primary conditions. They regard the weakening of the bird's constitution by such causes as bad seasons, insufficient food, and over-stocking as the prime factors in inducing the ailment; but such opinions, while deserving of consideration, leave the idea of a specific cause undiscussed. The fourth and fifth investigators are Dr. R. Farquharson and Dr. Andrew Wilson. In 1874 Dr. Farquharson expressed the belief that grouse-disease was "an epidemic and infectious fever." Dr. Andrew Wilson, as the result of his independent dissections and observations made about the same period, refuted Dr. Cobbold's views, and in a paper (from which Dr. Klein quotes) read before the Medico-Chirurgical Society of Edinburgh, and subsequently published in the 'Edinburgh Medical Journal,' showed that the disease was characterised by inflammatory symptoms of the respiratory and digestive organs. He laid particular stress on the inflamed state of the lungs in diseased birds, and suggested that the ailment was of an infectious type.

Dr. Klein now comes into the field, armed with the latest methods of germ research. He finds the views of Dr. R. Farquharson and Dr. Andrew Wilson to be those which best harmonise with the facts. He confirms the evidence obtained by Dr. Wilson after repeated dissections of diseased birds; and the grouse-disease has thus at last passed from the limbo of obscurity, and has come to rank as an infectious malady, owing its existence to the multiplication in the bodies of the birds of a specific germ whose conveyance from the sick to the healthy grouse accounts for the spread of the ailment.

A thorough examination of the symptoms and characters of the grouse-disease shows that it is an ailment due to the

propagation and multiplication within the bodies of these birds of a specific germ. This much Dr. Klein has clearly proved. The chief changes he finds, as Dr. Wilson found, in the lungs, while congestion of the liver is also a conspicuous sign. No germs could be found in the blood of grouse which had died of the disease in June, 1887 (*Zool.* 1887, p. 334), nor could any microbes be found in the liver, lungs, kidneys, or blood of grouse which had perished in the spring and summer of 1888, 1889, and 1890. But when the same organs (lung and liver) of grouse which have been affected in the spring and early summer are examined, a very definite species of germ is found, forming, as Dr. Klein tells us, "continuous masses or plugs in some of the capillary (or finest) blood-vessels," while in the blood of the general circulation these germs "cannot be demonstrated." This is nothing unusual in the life-history of germs. There are many germs capable of producing disease which do not thrive or live in the blood itself, but do thrive and multiply in some organ or other, of which liver and lungs are good examples. The bacillus or germ of grouse-disease is of course a microscopic living particle, which in the fresh state is a spherical, or more generally an oval, corpuscle, "occasionally more distinctly rod-shaped or cylindrical with rounded ends." These germs occur singly, or are more commonly double—that is, under the shape and guise of dumb-bells. Most of them seem to possess no movement of their own, though now and then active locomotion is observed, the microbe spinning round or darting through the field of the microscope with an oscillatory movement of its body. In recent cultures of the germ the number of mobile microbes is greater than when the cultivation is of some age, from which fact Dr. Klein draws the conclusion that in the cultures there is produced some chemical substance that inhibits their movements.

Mice inoculated with the cultivated germ of grouse-disease die in from thirty-six to forty-eight hours. It is incidentally mentioned that the vitality of the germ is great, since cultures made in gelatine and kept for a year and a half proved to be capable of multiplying their kind. This fact has to be kept in mind in view of the explanation of the propagation of grouse-disease from year to year.

Used to inoculate certain birds, however, the germ of the

grouse-disease is seen to be singularly powerful in its effects. The Common Bunting and Yellowhammer are specially susceptible to its action. Some of these birds die at the twenty-fourth hour after inoculation. Sparrows in the proportion of about 70 per cent. also die with characteristic *post mortem* appearances. But one notable fact crops out in the course of Dr. Klein's researches. No result follows when the birds, or mice, or guinea-pigs are fed with the germ of grouse-disease. This proves that the vitality of the germ is either destroyed by the digestive juices, or that the natural method of inoculation is certainly not through the stomach. But, as Dr. Klein remarks, it is otherwise with the lungs. A bird inoculated with grouse-disease was placed in a cage with two healthy birds. The inoculated bird died during the second day; and the other two birds were found to be ill the day following, and died of the disease in the course of the third day, with a full development of the germs in their blood and in their lungs. Again, two wire cages were placed closely side by side. One contained a Yellowhammer affected by the disease after inoculation. It had been ailing for some days. In the adjoining cage were six healthy Yellowhammers. The two cages, says Dr. Klein, were covered with one cloth. All six birds in the second cage became ill with the disease in two days, and died during the next day, with all the symptoms of the disease. It is clear, then, from these details that the grouse disease is propagated not in food, but through the air. It is essentially and primarily a lung or respiratory trouble, which, as might naturally be expected, draws its infection from the air, and, of course, from pre-existing cases of the disease.

To the subjects treated in the second part of Dr. Klein's book, namely, fowl cholera, fowl enteritis, and "cramps" in young pheasants, we need not now refer. Our concern for the moment is with grouse-disease only, and upon this enough has now been said to explain the line of investigation pursued by Dr. Klein, and the nature of the results arrived at. The question is one of extreme interest to naturalists, and of even greater importance to those sportsmen who pay large rents for grouse-moors. The latter will naturally ask, "What is the remedy?" An enquiry not readily answered.

The only measures likely to be available in checking the disease are not so easy of application. It is all very well to say

that a sharp look out should be kept for Grouse which are anywise affected, and that these should be killed off and their bodies cremated to prevent the diffusion of germs. But one cannot look over grouse on a moor as if they were chickens in a poultry yard, nor diagnose their condition when on the wing at a distance. A great many diseased birds are sure to escape detection until, too late, they are found dead or dying.

Heather burning has much to recommend it, and, as at present advised, we have more faith in that, and in the avoidance of over-stocking, than in any other so-called preventatives.

ON THE BREEDING OF THE SAND GROUSE IN CAPTIVITY
IN DENMARK. BY HERLUF WINGE.*

TRANSLATED AND COMMUNICATED BY HAROLD RAEBURN.

WITH regard to the Sand Grouse, *Syrnhaptēs paradoxus*, in a wild state in Denmark, in 1891, there is no reliable information; but Herr Bertel Christensen, of Kjöbenhavn, has kindly made the following communication on the great success he has met with in inducing this bird to breed in captivity. He says:—

“Seeing that my pair of Sand Grouse (*Steppehöns*) during the summer of 1890, had laid eggs which were all fertile, though no living chick was hatched,† I took great pains during the spring of 1892 to obtain better success, which was happily attained.

The first egg was laid on June 15th, and, as appears below, I obtained in all nine eggs. Seeing that the Sand Grouse, even after being in captivity since 1888, were still very shy, there seemed no probability that they would hatch their own eggs. By the kindness, however, of the Directors of the Zoological Gardens of Kjöbenhavn, I obtained the loan of a bantam (*Rugehöne*), which proved to be an excellent sitter, and from the middle of May to the end of August carefully brooded the eggs of Sand Grouse, Chinese and Francolin-Quails (*Frankolin-Vagtler*), which I placed under it during the course of the summer.

* ‘Vidensk. Meddel. Naturhist. Forening i Kjöbenhavn,’ 1892, pp. 126—130.

† Op. cit., 1891, p. 129.

Occasionally when the Quail or Sand Grouse chicks (*kyllinger*) were about to break the shell, it became somewhat impatient, and pecked at the egg in order to let the chicken out, and in consequence two fully developed young Sand Grouse perished in the shell. The first chick, hatched on July 9th, was too firmly attached to the shell, and from the hæmorrhage caused by the loosening of the membrane it became very weak, and died the same day.

Three others which at various times were hatched, and became fully developed and lively, were smothered under the hen a few hours later, although, warned by previous experience, I watched them closely, and would have taken them from the hen as soon as they had become dry.

Two of these, hatched on July 24th, were very lively, and I was already congratulating myself that success was at length achieved. I would only have to allow them to rest a little after their great efforts, which it appears the Sand Grouse must exert to break the shell, for the chipping commences about the 20th—21st day, whilst the young bird does not appear until the 23rd—24th day. But in less than a quarter of an hour after I had last seen them, they both lay smothered beneath the hen.

At length, on August 6th, two chicks were safely hatched. I took them from the hen in due time, and placed them in a tolerably simple "artificial mother" (*kunstig moder*), made of an oblong tin tray, the lower part of a bird-cage (*fuglebur*), under which a small oil-lamp was placed, to give the necessary warmth.

It only remained to find suitable food to rear them on. I tried moistened ants' eggs mixed with egg-bread, and yolk of egg, together with bruised millet-seed; but although the much smaller Francolin Quails (*Frankolin-Vagtlær*), which were hatched almost at the same time, thrived well on this, and easily swallowed an ant's egg, the Sand Grouse, which were awkward and helpless (*ubehjælpssomme*) in the extreme, seemed unable to find nourishment in it, and one died on Aug. 11th. Unfortunately, I had thought too late of trying them with grass- and clover-seed (*græsfrø og kloverfrø*). The survivor thrived well on this, and is now (9th April, 1892) in the best of health, and very tame. Its colour is at present like that of the adult female. It is somewhat smaller than the old bird, but is perhaps not yet full grown.

A young one hatched on August 18th was smothered under the hen.

The following is a summary of the results:—

June 15.	One egg.	Destroyed by hen.
„ 17.	One egg.	Young hatched July 9th, died.
„ 27.	} Three eggs. Set under hen July 1st; two young hatched July 24th.	
„ 29.		
„ 30.		
July 8.	} Two eggs. Set under hen July 13th; two young hatched August 6th.	
„ 10.		
„ 20.	One egg.	Destroyed by hen.
„ 22.	One egg.	Hatched August 18th.

Thanks are due to Herr Christensen, not only for this information, but also for permission to draw the living young Sand Grouse, while the Zoological Museum at Kjöbenhavn is indebted to him for one of the dead chicks, together with the egg-shell belonging to it.

The newly-hatched chick agrees very well on the whole with Prof. Newton's description and figure ('The Ibis,' 1890, pp. 207—214, pl. vii.) of the young bird which was obtained in Scotland in 1889, the only one which has hitherto been closely studied. Yet the colour-marking, especially on the head, is more regular than in Professor Newton's figure, reminding one rather of Mr. Bartlett's figure of the young of *Pterocles alchata* (Proc. Zool. Soc. 1866, pl. ix.).

Thus there is a very distinct light stripe over the eye, and another running from the gape along the cheek to behind the ear. The down resembles in every respect that of the *Charadriidæ*, *Scolopacidæ*, and *Laridæ*.

I saw the living Sand Grouse chick for the first time on August 18th, when it was twelve days old. The next day it was sketched and painted by Herr H. Grönvold (pl. iv. fig. 2). It was then still for the most part in down; but, on the back and wings especially, the feathers were just ready to sprout. Many of the sprouting feathers had still their "down-pencil" on the tip (*dunpenselen i spidsen*, pl. iv. fig. 3). Unlike what is seen in the adult Sand Grouse, the feathers of the back and wing-coverts were marked tolerably uniformly and regularly, every feather being bordered with a light and dark stripe, the rest light, with a couple of dark arrow-shaped cross-bars in

regular marking, reminding one strongly of the corresponding feathers among the different species of Hemipode (*Turnix*).

Some years ago my brother, the late Oluf Winge, gave it as his opinion that the Hemipodes were the nearest relations of the *Pteroclidæ* among known birds, and that the Hemipodes were not *Gallinæ*, as one used to consider them, but came nearest to the doves. Since then I have myself gone into the question, and compared the skeletons of the two birds, and I must say that I hold the same opinion.

The little chick ran quickly about, standing well up on its legs. It did not utter any whistle, but clucked "gilik" like the old birds, only in a higher key. It was said that it often grovelled in the sand (*ofte væltede sig i sand*). Some days later it was photographed. It had then grown somewhat larger, the feathers had sprouted out more, and several of the downy points (*dunspidserne*) had fallen off, but otherwise it had not materially altered in appearance. On October 13th, when the chick was a little over two months old, I had again an opportunity of observing it more leisurely and of comparing it with its parents. At a distance it was very like its mother, only perceptibly smaller. On the back and shoulders it had acquired new feathers; the wing-coverts especially were somewhat altered in appearance, being partly of a light yellow colour, partly light with a single dark kidney-shaped spot, partly light with very irregular dark bars and marblings. The pinion and tail-feathers were, on the contrary, unchanged. The first primary was not almost uniformly coloured, as in the old birds, but the tip and inner web were marbled with darker markings. The tail-feathers were considerably smaller, more mottled than in the case of the old birds, and dark with a lighter border, and with a few light spots towards the edge as a widening of the light border, though not amounting to a barring of light and dark.

Mr. D. G. Elliot, in his Study of the *Pteroclidæ* (Proc. Zool. Soc. 1878, pp. 262, 263), describes the primaries of the young Sand Grouse almost as in the old. The tail-feathers, on the contrary, he describes somewhat as here noted.

On February 2nd, 1892, when nearly six months old, the young bird was compared with a number of skins of adult Sand Grouse, and there then appeared two points of difference which had before been overlooked. The dark stripe, which in the adult

bird runs along the whole of the under side of the primaries, did not extend to the tip, and the three outermost wing-coverts were not, like the others, yellow with a single dark stripe along the middle, but were marked at the tips with large irregular bars. Several of the young bird's marbled primaries and mottled tail-feathers were by this time moulted, and were replaced with feathers which were exactly like those of the adult bird.

[Here follows a description of the Plate (pl. iv.), on which are figured (1) a newly-hatched chick, (2) a chick of thirteen days old, and (3) an immature feather with the "down-pencil" on the tip.]

THE STATUS OF THE WOODCHAT, *LANIUS RUFUS*,
IN GREAT BRITAIN.

BY O. V. APLIN.

WILLUGHBY refers clearly to the Woodchat as "another sort of Butcher-bird," but does not state where his specimen was procured, and the earliest mention of it as a presumably British bird is to be found in Gilbert White's 25th letter to Pennant. "A gentleman (he says) sent me lately a fine specimen of the *Lanius minor cinerascens cum maculâ in scapulis albâ Raii*; which is a bird that, at the time of your publishing your two first volumes of 'British Zoology,' I find you had not seen. You have described it well from Edwards' drawing." This letter is dated from Selborne, the 30th August, 1769. Montagu in 1802 had never seen a specimen, and doubted if it was a distinct species; but in 1813, in the "Supplement" to his 'Ornithological Dictionary,' he expresses himself satisfied on this point. He remarks, however, "it is esteemed so rare in England, that we question if there is at present a specimen in existence that was killed in the island." Selby in 1825 could not include it in the first edition of his 'Illustrations of British Ornithology,' though he did so in the second (1833).

In Professor Newton's edition of 'Yarrell,' after an enumeration of some specimens and nests referred to hereafter, the following details are given:—"The bird has been obtained near Brighton, and a second time in Kent, while some four or five examples are said to have been procured in Suffolk, and about as many in Norfolk, though the assertion of Hunt, that it had bred

in the county last named, very likely originated in error. Further inland it is stated to have been met with in Surrey, Hertfordshire, Nottinghamshire, Derbyshire, Worcestershire, and Yorkshire." Mr. R. Gray remarks that it is included in 'Den's list of the Birds of Forfarshire,' but it seems not to have been noticed in Scotland by any other observer; and the evidence therefore of its occurrence there must be regarded as unsatisfactory. There is no proof of its occurrence in Ireland; nor have I been able to discover any record of its having visited any of the Welsh counties.

Mr. Howard Saunders, in his 'Manual of British Birds,' p. 145, writes, "Not more than thirty examples are known to have been obtained in England during the last hundred years." The following preserved specimens, of which the history has been lost, may be amongst those referred to by him.

Mr. W. Eagle Clarke, of the Science and Art Museum, Edinburgh, writes me word that they have there two adult males, which came to them with the Edinburgh University collection, and bear the original endorsement, "England. Purchased, 1824." He adds, "Unfortunately it is now quite impossible to ascertain more about them." In the British Room at the British Museum there is a nest and two eggs with no label, but the nest contains a slip of paper on which is written in ink, "Woodchat Shrike. Taken June 15th; two eggs with nest."

There is also in the British Museum a nest labelled, "Banks of Thames. Presented by the late John Gould." With regard to these, and other nests, it is worth noting that the late Mr. Gould, writing in 1873, and referring to the alleged nesting of the Woodchat in this country, says, "For myself, I have never seen an authenticated egg which had been taken herein" ('Introd. Birds Great Britain,' p. 52). But whether he had not seen the Isle of Wight eggs, or did not believe in them, does not appear.

Mr. W. Evans informs me that he has seen an old specimen of the bird in the Berwick Museum "which may have been obtained on the Scotch side of the border."

The following instances of the occurrence of this bird in England have been recorded:—

NORTHUMBERLAND.—One shot near Bamborough, 29th April, 1859. In collection of Mr. H. Cresswell, of Cresswell Tower (Hancock's 'Cat. Birds Northumberland and Durham,' p. 42).

DURHAM.—Bewick in 1826 figured a Shrike which was shot at Auton Stile in this county in September, 1824, and which he supposed was a Woodchat, but as remarked by Selby ('Illustr. Brit. Orn.,' i. p. 154), it is not so fully described as satisfactorily to identify the species, and the figure bears a greater resemblance to the female or young of *Lanius collurio* than to any state of the adult Woodchat; for the female of this species, like the male, possesses the distinguishing patch of white upon the scapulary feathers. It is possible, however, that it may have been a young Woodchat, in which case it would resemble the female of the Redbacked Shrike.

CUMBERLAND.—One seen by Mr. Dickinson near Stainburn tannery in the spring of 1872 (Macpherson and Duckworth's 'Birds of Cumberland,' p. 29). Another seen "at Woodside, many years since, by James Cooper (J. B. Hodgkinson MS.);" (*op. cit.*).

LANCASHIRE.—One shot near Lancaster (MSS. of late Revd. J. D. Banister, quoted by Mitchell ('Birds of Lancashire,' p. 50). Another shot at Walton-le-dale, 1870 (*op. cit.*).

YORKSHIRE.—One received by Leadbeater in a fresh condition, and stated to have been killed in Yorkshire (Selby, 'Illust. Brit. Orn.,' vol. i. p. 153). Two young birds obtained at Scarborough by Mr. A. S. Bell, 1860-61 (Eagle Clarke, 'Birds of Yorks,' p. 61). An adult male shot at Hackness, near Scarborough in June, 1881. In Mr. R. Chase's collection.

NORFOLK.—One killed near Beechamwell, *vide* Scales, who had known it to breed and rear its young there (Stevenson's 'Birds of Norfolk,' p. 64). One killed at Swaffham, recorded by Lubbock, and said by him to have been in Mr. Hamond's collection. This is possibly the bird seen by the Revd. R. Hamond of Swaffham, and followed by him for a considerable distance, as recorded by Selby ('Illust. Brit. Orn.,' vol. i. p. 153). A male, nearly adult, shot at Yarmouth, 29th April, 1859. In Mr. J. H. Gurney's collection. An adult male shot in the Apollo Gardens, Gt. Yarmouth, and received in the flesh, on the 16th May, 1885, by Mr. R. W. Chase of Edgbaston, who heard that several others were obtained on the east coast further north. In Mr. Chase's collection (Zool. 1886, p. 27). Mr. J. H. Gurney, in 1884, considered that this was the only veritable Norfolk specimen (List of Birds in Mason's 'History of Norfolk').

SUFFOLK.—An adult male shot at Lound, near Lowestoft, 2nd May, 1859 ('Birds of Norfolk,' p. 64). An adult male shot at Henham Hall, 10th May, 1860, by Mr. T. M. Spalding of Westleton; formerly in his collection; now in the collection of Mr. J. H. Gurney. One killed at Bradwell, Suffolk, April, 1829, referred to by Messrs. Paget in their 'Nat. Hist. Gt. Yarmouth.' Another example is mentioned in Messrs. Gurney and Southwell's list as having occurred at Gorleston, but I learn from the Revd. Julian G. Tuck that the three first are the only reliable instances of the occurrence of the Woodchat in Suffolk.

ESSEX.—One seen by Mr. Ambrose in the Colchester Highwoods (Miller Christy, 'Birds of Essex,' p. 106). Two, male and female, received in the flesh by Mr. Travis, 27th August, 1880. Said to have been shot (by a man named Jeffrey) between Elmdon and Arkesdon (*op. cit.*). A pair seen by the late Dr. E. G. Varrenne on a farm near Mark's Tey (*op. cit.*). In the British Museum collection is a nest labelled "Epping. Presented by J. Gould, Esq."

NORTHAMPTONSHIRE.—One seen in Gore Piece, near Duddington, in the spring of 1869 (Lord Lilford's 'Notes on Birds of Northamptonshire,' p. 45). One, a female, picked up dead on a fallow field near Stamford, 8th January, 1883 ('Field,' 13th January, 1883). Mr. A. G. Elliott preserved it for his collection (Zool. 1883).

NOTTINGHAMSHIRE.—A male, shot in May, 1859, in Sherwood Forest, near the western entrance to Thoresby Park, by Mr. H. Wells (Sterland and Whitaker's 'Birds of Notts,' p. 12).

DERBYSHIRE.—"I have a note of observing a Woodchat May 19th, 1839, operating on a Yellow Bunting which it had firmly impaled to a thorn" (Briggs, Zool. 1850, p. 2478). Mr. F. B. Whitlock states that this is the only note he has of the Woodchat in Derbyshire.

HERTFORDSHIRE.—One shot near Baldock, Herts, spring of 1856, and preserved by Norman, birdstuffer, of Royston (E. J. Tuck, Zool. 1856, p. 5203). Another seen by Rev. H. A. Macpherson near Hertford, in May, 1873 (Trans. Cumberl. and Westmorl. Assoc. no. ix.).

BERKSHIRE.—One in the British Museum labelled, "Reading. Theo. Fisher, Esq." This is not mentioned in vol. viii. of the Catalogue of Birds.

WORCESTERSHIRE.—Mr. C. Parkinson of Worcester assumes that the authority for the statement in 'Yarrell, British Birds,' as to the occurrence of the Woodchat in this county, is Hastings' 'Illustrations of Nat. Hist.,' Worcester, 1834, pp. 62—72: Birds. Mr. Parkinson in a letter to me adds:—"In June, 1890, in the Teme Valley, between Powick and Bransford, I saw an unfamiliar Shrike drop down suddenly and silently over a tall hedge into a dense hazel coppice. I know the red-backed species very well. It was quite different in flight and extremely shy: about the size of the red-backed species, very white on the under parts, and a pronounced red patch on the back of the head; a little white at the base of the dark bill. I never found it again; but an examination of the ground beneath the hedge revealed a young Linnet with the skull broken in. Without having had the bird in my hand, I feel sure it was a male Woodchat, chiefly from the peculiar manner it dropped down into the thicket, and the general appearance, which was not that of the red-backed species."

WILTSHIRE.—One seen by Mr. Arthur H. Macpherson in Savernake Forest, 6th June, 1884. It was a very brightly coloured bird, and very tame (Zool. 1888, p. 429). Another said to have been killed at Salisbury is mentioned in the same note. The Rev. H. A. Macpherson was informed that it was shot some few years before he saw it by a relative of the man who showed it to him (at Reading) as an unknown bird.

SURREY.—An adult bird of this species was seen by H. L. Meyer between Hatchland and Guildford, perched on an oak bough. He figures the bird in his 'Illustrations of British Birds,' 1842, pl. 44.

KENT.—One in the British Museum, a young male, formerly in Leach's collection, and labelled "Kent" ('Yarrell's Brit. Birds,' vol. i. p. 216). This bird is mentioned in G. R. Gray's 'Catalogue of British Birds' (1863), and is probably the bird which was "killed in the neighbourhood of Canterbury" (Jenyns' 'Manual Brit. Vert.,' p. 96). It is not enumerated, however, among the specimens now in the museum in vol. viii. of the Catalogue of Birds. The author of the 'Manual,' in reply to my enquiries, has written to say that at this distance of time it is impossible to remember his authority for the locality, his book having been published in 1835. Mr. W. Oxenden Hammond of

St. Albans Court, Wingham, writes:—"As to the Woodchat, about three years ago I heard from a birdcatcher at Dover that he had just caught one. I went at once to see it, and learn about it. The bird was in beautiful plumage, all the feathers, tail and wings, perfectly clean. The owner told me that his men had taken it in the warren near Folkestone. That when they saw the bird it entered a dense clump of bramble, going to the bottom, and that they enclosed it in the bramble, and so caught it. I look on it with a certain amount of suspicion." This bird is in Mr. Hammond's collection. Another was seen and shot by Capt. H. W. Hadfield (but escaped wounded by creeping into a hedge) on 14th May, 1857, close to Tunbridge. As it flew past he observed that it had a fly in its beak. The rufous of the head and neck and white underparts were remarked (Hadfield, 'Zoologist,' 1857, p. 5685).

SUSSEX.—Mr. Edwin Pratt, of Brighton, tells me that he shot an adult male Woodchat on the 4th May, 1866, at Preston, near Brighton. It was seen in the flesh by the late Mr. E. T. Booth, and by Bishop Wilberforce, and was purchased by the latter ('Zoologist,' 1866). See also the 'Birds of Sussex' (p. 39), by Mr. Borrer, who considers that it is the specimen mentioned in 'Yarrell' (vol. i. p. 216). Mr. F. Henniker, of Carcolston Hall, Bingham, Notts, writes me word, "I am quite certain that I saw a pair of Woodchats in the parish of Slaugham (near Crawley), Sussex, in the year 1870, and I think if you knew anyone living in the vale between the Forest Range of Sussex, and the South Downs, you would be almost sure to hear of one or more pairs." Mr. Thomas Parkin has recorded ('Zoologist,' 1892, p. 229) the occurrence of an adult male at Fairlight, near Hastings, in the first week of May, 1892. I am indebted to Mr. G. W. Bradshaw of Hastings for a beautifully executed photograph of this specimen taken after it was set up.

HAMPSHIRE.—"Jesse quotes from Gilbert White's MS. notes that a hen Woodchat was seen washing at Wellhead, attended by the cock, and that the former was shot." No date is given (Jesse's Gleanings, second series, p. 161). Mr. A. G. More was informed that the Woodchat had bred twice at Freshwater, and that one of the nests with eggs, as well as a young bird shot there in September, 1856, were in the collection of the late Mr. F. Bond (*vide* 'Zoologist,' p. 6851). The bird (labelled on the back of the

case, in Mr. Bond's handwriting, "Shot by Mr. H. Rogers, Freshwater, Isle of Wight, September, 1856"), is now in Mr. R. W. Chase's collection, where I have seen it. "As some pairs are sometimes to be seen [in the New Forest] in the summer, I should not be surprised to hear of its breeding, more especially as Mr. Bond has obtained the eggs in the Isle of Wight" (Wise's 'New Forest'). The late Mr. Braikenridge had a nest and eggs from the same source ('Yarrell, Brit. Birds,' vol. i. p. 216).

DORSETSHIRE.—Pulteney says, "I have not seen the Woodchat, but am assured it has now and then been shot in Dorsetshire" (Mr. Mansel Pleydell's 'Birds of Dorset,' p. 17). One was killed at Bloxworth (*vide* Rev. O. P. Cambridge, 'Birds of Dorset,' p. 17). Some eggs of the Woodchat in the county museum are stated to have been taken from a Dorsetshire nest ('Birds of Dorset,' p. 17). In June, 1876, Mr. Arthur Lister, "being on the Lyme Regis undercliff with a companion, both provided with good telescopes, observed a male Woodchat perched on one of the bushes which abound on that vast tract of tumbled ground." He made a sketch of the bird while watching it, and carefully noted the colours, which he correctly described in 'The Field,' 8th July, 1876.

SOMERSET.—One shot near Bristol, in Somerset, is preserved in the collection of the Rev. A. C. Smith ('Birds of Wiltshire,' p. 123). Another, in the collection of the late Mr. Charles Prideaux, of Kingsbridge, Devon, is stated to have been killed in Somersetshire ('Zoologist,' 1852, p. 3474).

DEVON.—One was shot at Mutley, by Pincombe, of Devonport (Bellamy, 'Nat. Hist. S. Devon,' 1839, p. 200). Another, immature, was obtained at Kingsbridge ('Zoologist,' 1852, p. 3474; Mr. D'Urban's 'Catalogue of Birds of S. Devon'), and was preserved in the collection of the late Mr. Prideaux of Kingsbridge. The Rev. Murray A. Mathew informs me that in the collection at Millaton Hall, Bridstow, he noticed a case containing an adult and immature example of this Shrike, which had been mounted, evidently some years before, by an Exeter birdstuffer named Tucker (MS. notes). A female Woodchat in moult, with plumage much worn, was caught near Plymouth in October, 1866, and was purchased by the late Mr. Gatcombe ('Zoologist,' 1867, p. 557). It is now in the collection of Mr. J. H. Gurney. Mr. D'Urban, in his 'Catalogue,' adds, "Another specimen is said to have occurred

in Devon." Some further particulars are given by Messrs. D'Urban and Murray Mathew in their recently published work on the 'Birds of Devon,' 1892, p. 50, where it is stated that some of the late Mr. Prideaux's birds are deposited in the Town Hall at Kingsbridge.

CORNWALL.—An adult male was caught in a boat off Scilly, September, 1839 (in the text of the work, 1849; but from the 'Annual Summaries,' p. 191, it appears that the former is the correct date). In collection of late Mr. E. H. Rodd; and now in that of Mr. F. R. Rodd ('Birds of Cornwall,' p. 25). "Several birds of the year were caught on Scilly Islands in the autumn of 1849. Supposed from their condition and plumage that they might have been bred somewhere in Great Britain ('Birds of Cornwall,' p. 25).

SUMMARY.—The records here collected show that (even including the doubtful occurrences) not more than about thirty-five or forty examples of the Woodchat are known to have been killed in Great Britain. These have been obtained in various English counties ranging from Northumberland to Cornwall (Scilly), but chiefly in those of the eastern and southern coasts. In addition, the Woodchat has been recorded as having been seen on ten or a dozen other occasions. It has been recorded as breeding at least twice in the Isle of Wight, and other nests and eggs are supposed to have been taken in England as above mentioned.

NOTES AND QUERIES.

MAMMALIA.

On the Change of Colour in the Fallow Deer as observed in the New Forest.—When recently reading Mr. F. E. Beddard's interesting work on 'Animal Coloration,' I came across the statement that, with the exception of the Manchurian and Japanese deer, there is in the summer and winter dress of the deer species, "no alternation between a spotted and an unspotted condition." This, and other statements that have from time to time come under my notice, when the common English Fallow-deer has been the subject of discussion, lead me to think that the change of coat that takes place in this species when, as in the New Forest, in a perfectly wild condition, has escaped the notice of naturalists, and that a description of

what annually occurs among these deer may be of interest. In the New Forest, during May, June, July, and August, *all* the Fallow-deer are uniformly of a light red colour, spotted thickly on the flanks with white and light grey spots—such, in fact, as in parks are termed “fallow” deer. In September the coat begins to change, and by November *all* the deer are uniformly a very dark brown, almost black, on the back and sides, shading off to a light dun on the flanks, belly, and legs, without any spots at all. The white patch below the tail is unaltered, but is rather more conspicuous in winter than in summer, owing to the darker colour of the animal. In some individuals the spots in summer are brighter and more numerous than in others: in winter there is but little difference, except that the bucks are, as a rule, slightly lighter in shade than the does. Both of these winter and summer colours are common enough in parks; but in every case that has come under my observation, those deer which are red and spotted in the summer, remain of the same hue in winter; and those which are dark or black at one season of the year, remain of that colour during the whole twelvemonth. What would be interesting to know is, whether in other places where Fallow-deer are genuinely wild—not where semi-domesticated deer have been turned out and allowed to breed—the same biennial change of colour takes place, and if so, how it comes about that confinement in an enclosed space has altered the habit of the species, as in most parks it certainly has. Wild Roe-deer, as no doubt most readers of ‘The Zoologist’ know, change colour in summer, being at that period much the shade of red of a fox; in winter their colour assimilates nearly to that of a Red-deer. The New Forest deer are the lineal descendants of those which, whether indigenous to this county or not, were existing in that district at the time of the Norman Conquest, when most of the tract of land in which they now roam was afforested. Though their numbers have fluctuated very greatly at different times, yet from that day to this wild Fallow-deer have never been banished from the woodlands of this part of England. Fresh blood may possibly have been introduced from time to time, but the only authentic record of anything of the sort that I am aware of, is that of an importation of Scandinavian deer, very dark in colour, by James I. There can therefore hardly be found a more perfectly wild, undomesticated herd of Fallow-deer than the small remnant which now exists of the thousands which abounded there within the recollection of hundreds of people now alive. There has lately been some discussion in your pages on the subject of albinism in various animals. It may interest your readers to know that in 1883 an albino doe fawn was dropped in New Forest. It was at first of a pale chestnut, gradually becoming cream-colour. I killed the animal ultimately, and it had all the appearance of an albino, with the iris of a very pale yellow; but during its life it produced three fawns, which were all of the same colour as itself, though their sire must have been of the ordinary colour: of these

the only one that reached maturity had eyes of the same description as the original doe.—GERALD LASCELLES (The Queen's House, Lyndhurst).

Wolves in France.—The French Minister of Agriculture, publishing the annual statement with regard to the number of Wolves killed and of the premiums paid for their destruction in France, states that the total for 1891 was 404, of which 149 were full-grown animals and 253 cubs, the amount paid for their destruction being £1013, at the rate of £4 for a full-grown animal and £1 12s. for a cub, a small extra sum being given for she-wolves with young. The number of Wolves destroyed was considerably less than it had been in any previous year, the figures being 461 in 1890, 515 in 1889, 760 in 1886, and 1316 in 1883, when as much as £4200 was paid in premiums, and in that year no fewer than nine wolves were killed which had attacked human beings. By far the most wolves were killed in the central and south-western departments, such as the Dordogne (67), the Charente (47), the Creuse (20), and the Vienne (15); while only one was killed in the three Pyrenean departments, and none in the three Alpine departments.

The Polecat in South Wales and Bucks.—It may interest you to know that on Sept. 1st I received a live wild female Polecat, which was caught uninjured near Whitland, South Wales. From its appearance I should think it was bred this year. The keeper who caught it says he has trapped eighteen within the last eighteen months. I have also heard of several being seen in Bucks this summer near Aylesbury; one, a big dog Polecat, had been known for several months to be lying about a brick-yard on the outskirts of Aylesbury, and was killed in July last by a man with a stick in a back yard in a row of small houses near the brick-yard, where it had apparently come after some tame rabbits the man had in his yard. I know of one now, in a village near Aylesbury, which is often seen by a hay-rick; it is believed to live in the thatch, as it has been seen climbing up. My old dog Polecat, from which I have bred with Ferrets for four seasons, died last spring, I believe from old age; he was an old one when caught. My younger one, now in his second breeding season, is well, and the sire of some young half-bred ferrets born on the 2nd August last.—J. H. B. COWLEY (Callipers, King's Langley).

Rats stealing Gooseberries.—Mr. G. Reade, of Milnthorpe, Westmoreland, writing to a contemporary says:—"The ripe gooseberries (Aston Reds) in my garden were disappearing from the trees very fast, and I considered that it was the Blackbirds that were taking them. However, my housekeeper called my attention to a large Rat taking the berries off with his mouth and dropping them to other Rats below; after waiting quietly, another climbed the tree and helped to gather the berries. In a little time they both came down, each with a berry in its mouth, having a

curious appearance. I saw them several times repeat the performance. I then placed a wire cage-trap under the tree, and in three days caught nine of them. I have known them steal grapes and some other fruits, but this is the first time in my life that I have known Rats steal and eat gooseberries."

Field Mice and Rooks.—While the attention of naturalists is being drawn to the subject of Field Mice by the plague of these creatures which is now devastating hundreds of acres of Scotch soil, it may not be uninteresting to describe the systematic way in which, under favourable circumstances, Rooks hunt and destroy them. In the winter of 1889, while living in the Thuringia Wald, I noticed that a large stubble-field, a few hundred yards from where I lived, was much frequented by Rooks. They seemed to be standing about in an idle sort of way, excepting that they cawed rather frequently, and thereby excited my curiosity. One or two of them had their beaks buried up to the hilt in the ground, and remained for longer or shorter times in such an attitude. They all flew away when I approached to examine the spot. I could find no trace of any special operations, no digging or scratching, and I was much puzzled as to what they were about. This happened morning after morning, and the object of their assembling in the stubble-field threatened to remain a perpetual puzzle to me in spite of all my efforts to make it out. One frosty morning, however, it was all made clear. The cawing of the original assemblages had evidently been successful, and the field was almost covered with their coal-black *confrères*. They were very silent and very busy, with their beaks buried in the earth and their tails sloping upwards; after remaining in this attitude for some seconds, each one would, with a short, hurried movement forward, thrust his beak in again. They were clearly hunting Field Mice. On visiting the field next morning the whole plan of operations was clear. There was not a Rook to be seen; but during the night a slight snow had fallen, which the wind had scattered so that it lay only in the furrows and slighter depressions in the soil. The beaks and feet of the Rooks of the day before had evidently slightly crushed in the mice runs, and in the shallow furrows thus made the snow was lying. An enormous irregular but close network of wavy white lines was seen to spread out over the field. So close was this network of runs that it was quite clear why so many Rooks were necessary. With a small number it would be impossible to close the runs; hence a daily assemblage with no result until by persistent cawing a sufficient number of Rooks were gathered together for a successful systematic attack. The runs are probably found by diligent probing of the ground with the beak, and when found, are systematically worked in such a way that two or more Rooks gradually approach one another. The unlucky Voles would thus find their runs blocked up in all directions by the beaks of their enemies, slowly and inexorably advancing towards one another. If undisturbed, it is clear that

Rooks could in this way exterminate all the Voles in a field, and this is probably what happened in this case. At intervals of three or four yards along the runs, the holes were found through which the Voles had been pulled out of the ground. If two Rooks met along a run, there would generally be two holes, about four inches apart, sloping inwards towards one another; and not infrequently there were signs of a great struggle close to the hole, which I took to mean that only one Vole had been pulled up, and that the Rook which unearthed him had to fight for the booty. Sometimes, where three runs crossed, there would be three holes forming a small triangle; round some of these groups of holes the signs of battle were terrific. In some cases the earth between the three holes had been torn up so that there was only one large triangular hole. The three Rooks had probably simultaneously seized a single unfortunate Vole, and the struggle to pull him into three parts resulted in tearing up the soil. So numerous were these holes, each one meaning the death of one, two, or three Voles, that I have no doubt the Rooks did their work thoroughly. I saw no more of them in the field the whole winter.—HENRY M. BERNARD.

Barbastelle in Gloucestershire.—Referring to the note under this heading in your last number, I cannot plead guilty to overlooking the occurrence of this Bat in my own town. The specimen in question was caught in a remote house close to a great wood, nearly three miles from Stroud.—C. A. WITCHELL (The Acre, Stroud).

BIRDS.

The Siberian Pectoral Sandpiper in Norfolk.—Through the vigilance of Mr. Lowne, of Yarmouth, I am enabled to record the addition of yet another rare straggler to the already long list of Breydon rarities. On the morning of the 30th August, Mr. Lowne called upon me with a small wader, in the flesh, which he said puzzled him, asking me if I could name it for him. Not having any special general work on this class of birds at hand, I was equally as puzzled as Mr. Lowne. I therefore sent the bird on to Mr. Gurney, who in returning it stated his belief that it was an example of Horsfield's *Tringa acuminata* (*T. australis* of Gould), the Sharp-tailed Sandpiper of American authors, with which opinion, aided by the description in Mr. Seebohm's 'Geographical Distribution of the Charadriidæ,' the figures in Gould's 'Birds of Australia' (vol. vi. pl. 30), and after examining two specimens in the Norwich Museum, marked "Australia" and "New South Wales" respectively, I fully concurred, and this determination of the species was subsequently confirmed by Prof. Newton. This species, which closely resembles *T. maculata*, from which it chiefly differs in having all the under parts spotted, and which was originally described by Horsfield from a specimen procured in Java, is known to be a regular winter bird in Australia, breeding in Eastern Siberia, where it occurs plentifully; in

Alaska it is met with in autumn. Mr. Seeböhm states that examples have been obtained in the middle of June in the valley of the Argun River; it has been observed on Behring's Island during the autumn migration. It passes along the coasts of Japan and China, and has been frequently obtained on many of the islands of the Malay Archipelago from Java to New Guinea. It winters in Australia and New Zealand. I cannot find that it has previously been recognised in Europe. The occurrence of this species in England is certainly of considerable interest, and Mr. Thomas Ground, of Moseley, near Birmingham, who was fortunate enough to shoot it, has favoured me with the following particulars of his meeting with it:—"I only saw the bird just as it alighted, and it did so in perfect silence; it then remained quite still, as if examining the ground; the other birds all took a short run. I fired on the instant, and it fell dead. A Ringed Plover also fell to my friend's shot at the same moment. The precise locality was on the Breyden mud-flats at the end nearest Yarmouth, on one of the flats which are left dry, or nearly so, at high tide. The date was the 29th August. The tide had been running out about an hour. Had I recognised the bird as a stranger, I should have taken care to have given it an opportunity of displaying itself." It is curious that this bird should have been killed in the same locality as the first example of its New World ally, the Pectoral Sandpiper, which was met with on the 17th October, 1830. Mr. Ground's bird proved to be a female by dissection, probably fully adult; the legs when fresh were olive-green, the inside of the mouth flesh-coloured. The following comparative measurements of three of these birds,—No. 1 from "Australia," No. 2 from "New South Wales," and No. 3, the recently-killed Breydon specimen,—will show that individuals of this species, like the Pectoral Sandpiper, differ considerably in size:—

	No. 1.	No. 2.	No. 3.
Bill along the culmen	25 mm.	22 mm.	24 mm.
Wing from carpal joint to end of first } primary (the longest) }	135 "	137 "	129 "
Tarsus	32 "	30 "	28 "
Middle toe and claw	30 "	28 "	28 "

On comparing the principal measurements of the above three specimens of this bird with the average of twelve examples of *T. maculata*, I find the wing from the flexure to the end of the first quill-feather is much shorter (133.6 mm. against 138.58 mm.); the bill also is much shorter (23.6 mm. against 27.83 mm.); on the other hand, the tarsus is longer (30 mm. against 28.6 mm. in *T. maculata*), as is also the middle toe and claw (28.6 mm. against 27 mm.). As this species so closely resembles the

Pectoral Sandpiper, it would be well for those possessing British-killed specimens of the latter to examine them with a view to ascertain that they are correctly referred to the American species, with which Mr. Seebohm says it appears to intergrade, and it may be that at some future time I may have to return to the subject.—T. SOUTHWELL (Norwich).

Eared Grebe in Norfolk.—When boating on Rockland Broad, near Norwich, with my brother, on July 28th, we were much interested in seeing an Eared Grebe, *Podiceps nigricollis*. It was in full summer plumage, the golden-brown feathers behind the eye forming a striking contrast to its black head and neck. When first observed it was swimming at the edge of some growing water-plants. After a good look at it through our telescopes we rowed closer, but when about twenty-five yards off the the bird rose, the white on the wings being conspicuous. Shortly afterwards we saw it near a reed-bed on another part of the Broad, but when rowing towards it a gentleman in a small boat disturbed it, and again it took wing. We noted its resting place, and slowly paddled to within about twenty yards; it flew a short distance and settled on our lee. Sitting quite still, we allowed our boat to drift, and the wind slowly carried us to within ten yards before it again took wing. An hour later, on our way off the Broad, we again saw it near the place where we had first noticed it. Some authorities state that when this bird is disturbed it dives and does not fly. During the time we watched it we did not see it dive. The Eared Grebe is sometimes met with in Norfolk in the spring, and more rarely in the autumn. I cannot find any record of one being seen in July, Mr. Booth, in his 'Rough Notes on British Birds,' mentions that a man once brought him an old bird and two young, but he did not take a note of the date.—EDWARD BIDWELL (Twickenham).

Eared Grebe and Tufted Duck in Anglesea.—While shooting at a small lake in Anglesea on the 1st of August last, I obtained a male Eared or Black-necked Grebe, *Podiceps nigricollis*. There were also on the water a number of Coots and Little Grebes, but this bird was feeding by itself. Is this not a very unusual date to find this species, which has generally only been taken as an accidental visitor in the spring or autumn migration? Can any of your correspondents give an explanation of its occurring at this time, and also of the state of its plumage, which is either that of a young bird, or after the autumn moult, as it has no trace of the nuptial plumes. The same day, a Tufted Duck, *Fuligula cristata*, was obtained on the lake, which species, I am glad to say, appears to be fairly established as a resident in Anglesea. I have now seen this duck in breeding plumage in Anglesea, Cheshire, and Northumberland.—T. A. COWARD (Bowdon).

A Brood of Pied Blackbirds.—A brood of Blackbirds, all more or less marked with white, has been reared this summer by the parent birds

(which are normal in colouring), in a garden at Fallowfield, not far from here. I quote the above on the authority of my friend Prof. W. Boyd Dawkins, to whom the garden belongs.—DOUGLAS STUART STEWART (North Leigh, Prestwich, Lancashire).

Range of *Cinclus melanogaster pyrenaicus*.—In my recent article on Swiss birds (p. 11), I described some Dippers with head and neck conspicuously pale, but entirely wanting the chestnut band on the belly, and looking very dark-coloured underneath. These birds, which I found on the Aare at Meiringen, puzzled me very much at the time; but on reading an article by Mr. Dresser in the last part of 'The Ibis' (p. 382) on White-breasted Dippers, I find that he describes a form from the Pyrenees similar to the birds which I saw. It appears then that this form is also found in Switzerland. On the Engstlen Alp (6100 ft.), about 4000 feet above Meiringen, I saw an undoubted example of *C. albicollis*, which has the chestnut band.—O. V. APLIN (Bloxham, Oxon).

Ruddy Sheldrakes in Ireland.—On the 19th August, my friend Mr. John McConnell, of Burt, sent me, for identification, a duck which he had shot out of a flock of six on Burt Slob, near Inch, Lough Swilly, on the previous evening. I was delighted to find it was a Ruddy Sheldrake, a young male, in perfect plumage. The wing-coverts were pure white, and the primaries almost pure black, and there was no trace of the dark ring round the neck—not a feather showed marks of captivity. I know of no ornamental water on which ducks are kept in Co. Donegal or the surrounding districts of Co. Londonderry, and I think we may safely assume that this flock was of genuine wild birds.—D. C. CAMPBELL (Londonderry). Communicated by R. J. USSHER.

Ruddy Sheldrake in Co. Donegal.—Prof. Leebody, of Londonderry, has kindly furnished me with the following facts:—A flock of six Ruddy Sheldrakes was seen at Inch Reclamation Slob, on August 18th. One was shot on the 18th or 19th by Mr. McConnell, of Inch, and was stuffed by McCourt, of Derry. It is a young male in very nearly complete plumage. Three of these birds remained at Inch for some days.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

Ruddy Sheldrake in Co. Dublin.—A flock of five of these birds appeared at Skerries in the latter part of June, of which three were shot, two unfortunately not preserved. Another was shot a week later at Drogheda, probably part of the same flock. I have heard of another shot at the same time at Portarlinton, Queen's County.—E. WILLIAMS (2, Dame Street, Dublin).

Ruddy Sheldrakes in Buckinghamshire.—During the past four years no less than ten Ruddy Sheldrakes have been hatched and reared at Stoke

Park, near Slough. Of these only two were caught and pinioned; the rest flew away usually when the frost and snow came.—H. HOWARD VYSE (Stoke Place, near Slough).

Ruddy Sheldrake in Lincolnshire.—A Ruddy Sheldrake, *Tadorna casarca*, was brought to me on September 1st by H. Stubbs, a wildfowler. It had been killed the same morning from a pool of water on Humberstone "fitties" by a Cleethorpe gunner, to whom Stubbs gave a couple of Mallards in exchange. The bird is apparently in immature plumage, and probably a female. A stormy S.W. wind had been blowing during the previous night.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

Hoopoe in Norfolk.—On the 19th April last an adult male Hoopoe was brought to me. It was in exquisite plumage and a good state of preservation. It was picked up dead the day previously at Walcot. Having no wound or external hurt of any kind so far as I could see, I concluded that it had fallen a victim to the cold and rough weather which we had experienced during the previous week. On May 7th and 9th, 1890, a single Hoopoe was seen at Swayfield by Rev. F. S. Thew, he having previously seen one there in 1888. Two were killed in the neighbourhood of Yarmouth in 1885, but I think these have already been recorded in 'The Zoologist.'—MAURICE C. H. BIRD (Brunstead Rectory, Norwich).

Summer Birds kept through the Winter.—Under this title in the last number of 'The Zoologist,' is a note by Mr. J. H. Gurney. But what does he mean by "summer birds"? I have seen the Pied Wagtail in my garden in the depth of winter, and have kept it and the Grey Wagtail in an unheated, exposed aviary. The Greater Whitethroat, too, is a hardy bird, far more so than the Wheatear, which, however, is not delicate. The Swallow and the Blackcap might be called summer birds, although individuals of both species are sometimes seen with us in the winter. All the birds which Mr. Gurney mentions have been kept through the winter in England before—even the Swallow having been exhibited in two consecutive years at the Crystal Palace Bird Shows. I have been informed, moreover, that the exhibited specimens were from two different counties, though generally imagined to be the same individual. If this is so, it would show that it is less difficult to keep this bird in confinement during the winter than is generally supposed.—A. G. BUTLER (Beckenham).

Lapwings carrying their Young.—Most field ornithologists, at one time or other, in districts where Woodcocks breed, have seen the curious habit that bird has of sometimes removing the young by carrying them one at a time between the feet and legs, very much after the same way in which a hawk carries its prey. (See 'The Zoologist,' 1879, p. 433, and figure.) One day at the end of May last, while I was passing along a road in Southwick, a Lapwing flew over my head, holding between its legs, pressed up against

its abdomen, with its tail at the same time much depressed, what I have every confidence in saying was a young one. The bird flew into the adjoining field, and I marked the spot, and on running up found a young one, perhaps four days old or so. Many years ago I saw a similar incident, and the belief is very general amongst country folks that Lapwings will, when any danger threatens, remove their young to safer spots by carrying them. Still I cannot find any reference to the habit in such ornithological literature as I possess. The carrying of their young must be a rare incident in the life of the Lapwing, otherwise it must have been noticed. But how are we to account for the certainly wide-spread belief of country dwellers that it frequently does so?—R. SERVICE (Maxwelltown, Dumfries).

Varieties of the Jackdaw.—I have just seen, in the hands of the local birdstuffer (Mr. Reeves, of Reigate), two curiously abnormal Jackdaws. One is almost perfectly white, although in certain lights a pale brownish tinge shows upon the sides. The legs are a light brown; the eyes normal. The bird is therefore not a true albino. It was shot in Hertfordshire, after having been seen about the neighbourhood for two years previously. The other was taken recently in this neighbourhood. In this bird, which is otherwise normal, the lower mandible projects, in an irregular, malformed fashion, quite half-an-inch or more beyond the upper mandible, which is very short. It is difficult to understand how the bird could possibly have obtained food, but it was in good condition and well nourished when it passed into the birdstuffer's hands.—E. P. LARKEN (Gatton Tower, Reigate).

Quail in Sussex.—On September 8th a Quail was killed by a reaping-machine in a barley-field of Mr. Tanner's, at Woolbeding, near Midhurst. It was found to weigh four ounces and a half. Quails are not common hereabouts, though Mr. Langdale has noted their occurrence in summer in the neighbourhood of Compton.—H. D. GORDON (Harting Vicarage, Petersfield).

Black-tailed Godwit in Co. Donegal.—A flock of six was seen at Inch Reclamation Slob on August 18th. Two were shot by Mr. H. A. Leebody on that date, but only one was secured. This bird, in immature plumage, was stuffed by McCourt, of Derry. Prof. Leebody also informs me that the Bar-tailed Godwit is not uncommonly seen at Inch, and that he has one in his collection.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

Spotted Crake in S.W. Lancashire.—During the last few years the Spotted Crake, *Porzana maruetta*, has occurred at irregular intervals throughout this district. From notes, I find that an adult bird was killed by a telegraph-wire) at Prestwich in August, 1891; another was picked up

on the outskirts of Bolton in September, 1891, having been killed in a similar way; and I have lately seen a mounted example, in good plumage, which was shot on the Ince marshes, near Wigan, on the 1st August last. Besides these, instances have at various times come under notice of its occurrence at Horwich and Chorley. From the peculiar circumstances attending the death of these birds, we may safely conclude that they were migratory visitors! Certainly I do not think it has nested in this part of the country during the last twenty years.—C. E. STOTT (Bolton-le-Moors).

Pied Wagtail with Three Broods.—In a garden near here a pair of Pied Wagtails brought up, this year, three broods in the same nest.—E. P. LARKEN (Gatton Tower, Reigate).

Sky Lark singing at Night.—I send you an account of what I believe to be a curious and unusual phenomenon, and should be much interested to know if any of your readers have observed a similar occurrence. I happened to be out on a bicycle on the night of the 11th May last, when, it will be remembered, there was a partial eclipse of the moon. It was about a quarter to one, the eclipse being just over, when I caught the sound of a bird singing in the distance. I rode quietly on, when presently the air above me was filled with the rapturous singing of the Sky Lark. There seemed to be scores of them. How long they maintained the chorus I do not know. I rode slowly on, and gradually lost the sound in the distance. Some may think I am confusing the song of the Sky Lark with that of its ally, the Wood Lark; but I am quite familiar with the song of both of these birds, and am convinced that the singing I heard was that of the Sky Lark. Is it possible that these birds may have mistaken the cloudless re-appearance of the moon for the sunrise?—M. A. LAWS (The Lodge, Little Clacton).

[The Sky Lark is not the only bird that warbles at night. We have heard it often on a June night, as also the Sedge Warbler, Reed Warbler, Grasshopper Warbler, Nightingale, and Cuckoo as late as 11 p.m., when the unmistakable notes of the Corn Crake were likewise incessant.—ED.]

Speed of Homing Pigeons.—As showing what Pigeons can do under difficulties, it may be mentioned that at the pigeon-racing which took place on June 19th last between Piacenza and Rome, the first flight of birds was despatched from the former place at 6.16 a.m. in thick, misty weather, and that it rained heavily in Rome all day. Nevertheless, the first Pigeon reached Rome at 5 hours 6 min. 11 sec. p.m., and the second reached the capital only an hour later. Supposing the bird to have been one of those sent up in the first flight, it must have covered the whole distance of 415 kilometres (260 miles) from point to point in 10 hours 50 min. 11 sec. From experiments lately made to ascertain the dependence that could be placed on the pigeon-service between Ceuta and Malaga, it appears that the Spanish authorities could look with tolerable equanimity on any interruption

of the cable between Morocco and the Peninsula. Out of twenty-four pigeons released at Ceuta, twenty-three arrived at Malaga in excellent condition, in spite of having travelled something like seventy-five miles between the two stations.

Willow Warbler in London.—Whilst staying in London for a few days at Kensington I heard, on the morning of August 13th, the sweet song of the Willow Warbler from the adjoining street. I thought, "Is it possible that anyone can keep a Willow Warbler in a cage?" but when the song was repeated I ran to the hall-door, and then saw the little songster flitting rapidly away in the direction of High Street, one of the most bustling and crowded streets in the West End. The bird had evidently rested for a few moments in one or two little trees in Allen Street, and was then probably on its way to Holland Park, which was not very far off. I have never met with this pretty warbler even in a village street before.—CHARLES W. BENSON (Rathmines School, Dublin).

[Ornithologists in London are quite accustomed to the appearance of the Willow Wren, Chiffchaff, Wheatear, Spotted Flycatcher, and many other summer migratory birds at the period of their migration in spring and autumn. Hyde Park, Kensington Gardens, and the Botanical Gardens, Regent's Park, are regularly visited by Willow Wrens.—ED.]

Note on the Black-headed Gull.—I was walking along the shore from Queensferry to Cramond, on August 20th, in search of plants, and at the same time keeping a look-out for birds. Near Cramond I halted to watch the sea-birds that were feeding on the extensive stretch of sand and shallow left exposed by the retreating tide. I heard a peculiar noise as of trickling water, but could not at first make out whence it proceeded; after awhile, however, I noticed that it came from a gull that was busy in a shallow pool not far from the land. This bird—a Black-headed Gull, though without the black head now—would walk one or two steps, halt and get into position, then, crouching somewhat, it would balance itself on its right leg, and with the other beat the water continuously, or sometimes it would use both feet in the performance and go through a sort of rude dance. Its object was apparent, as it always followed up its jumping manœuvres by seizing such creatures as it had managed to dislodge. This was an excellent plan for the bird to adopt, as thereby it was enabled to procure a plentiful food-supply within a short area, whilst other birds were walking about cautiously over the sand, and covering a much greater extent of ground to get the same amount of food as this gull, by a judicious expedient, was getting within the narrow limits of a single pool.—ROBERT GODFREY (46, Cumberland Street, Edinburgh).

Nesting Habits and Food of the Long-eared Owl.—I have examined a good many nests of the Long-eared Owl, *Otus vulgaris*. I have seen them

in small thick belts of Scotch fir, and also in thick woods, but never very far from a path or road through the wood. Why is this? One nest was about 15 ft. from the ground, the other about 12 ft.; one was, I thought, on the base of an old Wood Pigeon's nest; I am not sure of the other. Round one were the remains of no less than eight rats, about one-third grown. I should not have written "remains," but rather dead ones, for it was the sight of two dead rats under the tree which first made me look about. I took the castings at the foot of both nests and soaked them in water, and made out the feathers of some finch and heads of small mice, &c. I cannot understand how folks who call themselves "sportsmen," or "lovers of nature," can allow Owls and Kestrels to be killed because a few cases have been proved in which they have killed winged game. I have Kestrels close to 340 young pheasants this season, and have not lost one of the latter. I have always found the remains of mice, beetles, &c., in the castings of Kestrels.—T. J. MANN (Hyde Hall, Sawbridgeworth, Herts).

[The reason for the proximity of Owls' nests to "a path or road through the wood," is probably that such a position enables the birds to get food for their young more easily and speedily. Keepers feed the pheasants in the rides; rats, mice, and small birds come out in these rides to pick up the pheasants' leavings, and are immediately seen by the Owl which is watching for them. The latter glides noiselessly off the bough on which it is sitting, picks up the "quarry," and is back at the nest in no time. If the nest were situated in a thick part of the wood, fewer vermin would be seen there, and the Owl would have to hunt at a distance from home, thereby wasting time, and incurring much additional labour. This hardly applies to the Barn Owl, however, which we have often seen hunting at a considerable distance from its nesting place.—ED.]

An Eider-Duck Farm.—Writing to 'The Globe,' a recent visitor to Iceland thus describes the manner in which the Eider Duck is there protected for the sake of the eider-down of commerce, which is so highly esteemed:—"One of the larger Eider-Duck farms is situated on a small island in the bay at Reykjavik, and, with the permission of the owner, can be visited by strangers. Not much agricultural labour or ingenuity is expended by the Eider-Duck farmer upon his property. It consists for the most part of a large field of stunted grass, which has been blown by the wind and worked by the action of the weather into round hummocks, such as may be frequently met with all over the barren and devastated country of Iceland. In the recesses and cavities between the hummocks the Eider Ducks may be seen sitting on their nests. Of these there are several scores, and the birds themselves when sitting are perfectly tame, some of them even allowing a stranger to stroke them with the hand. They are not all hatched at the same time, and many are still in the egg when the others are hatched and swimming about in the sea. The drake is a handsome,

showy creature, with much white plumage. He is excessively shy and wary, while the duck, whose plumage is brown and glossy, is, on the contrary, tame and confiding. The latter lays from five to six eggs at the beginning of June, and it is no unusual thing to find from ten to sixteen eggs in one nest, together with two ducks, which sit either at intervals or, if necessary, side by side, and, strange to say, they seem to agree remarkably well. The period of laying lasts six or seven weeks, and the birds are in the habit of laying three times in different places. From the first and second of these nests both the down and the eggs are taken away, but from the last it is very seldom that the farmer removes either. Should he do so with any degree of persistency the birds would desert the locality. In some cases the owner resides on or near the farm. In this particular instance he visited the island from the mainland once a week at the least. So soon as he and his men arrive at a nest they carefully remove the sitting female, and take away the superfluous down and eggs. The duck immediately begins to lay afresh, and covers her eggs with new down, which she plucks from her own breast. If the supply is inadequate, the male comes to her assistance and helps to cover the eggs with his down. This, being white, is easily distinguished from the brown covering which the duck supplies, and is not so good in quality. The nest is now, as a general rule, left until the young ones are hatched. There is not much callowness and helplessness about these youngsters. About an hour after they are out of the shell they quit the nest together, when it is once more plundered. The best down and the greatest number of eggs are obtained during the first three weeks of the laying period, and it has in general been observed that the birds lay the greatest number of eggs in rainy weather. The Eider Duck is a close and persistent sitter, and so long as she is sitting the drake, with commendable constancy, remains on the watch hard by, but as soon as the young are hatched, he considers his responsibility at an end, and leaves them to their own devices and the care of their mother. It is a curious and pretty sight to see how the latter looks after her brood. She leads them out of the nest so soon as they creep out of the eggs, and precedes them to the water, while they toddle after her. When she reaches the water-side she takes them on her back and swims with them for a few yards; she then dives, and the little ones are then left floating on the water like yellow corks, and henceforth are obliged to look after themselves. Indeed, the farmer seldom sees his flock again until the next breeding season, for they become comparatively wild, and live out among the damp rocks in the sea, where they feed upon insects and small crustacea and mollusca. Some idea of the value of the crop may be gleaned from the fact that one female during the whole time of laying generally gives half-a-pound of down, which is, however, reduced one-half after it is cleaned. The down is divided into *thang-dunn*, or sea-weed down, and *gras-dunn*, or grass-down. The latter

is generally considered to be the best in quality. The down is very valuable, and fetches from 15s. to 30s. a pound. The three takes of down vary considerably in quality, the first being superior to the second, and the second to the third. The birds themselves, apart from their down-giving capacities, are of little value. The down taken from a dead Eider is valueless, as it has lost all its marvellous elasticity."

Canary-breeding in Germany.—Canary-breeding in Germany has, from the commencement, been chiefly a home industry of poor people. The principal seat of the industry was formerly the Hartz Mountains, where the poor mountaineers, engaged chiefly in the timber and mining industries, were in great need. Almost every family then had in the sitting-room, bedroom, or garret, a breeding-place for their birds. In the summer, the food necessary for the birds was easily obtained, and before the winter came the dealer had purchased them. After the Hartz Mountains became more frequented by visitors desirous of benefiting by the pure Hartz air, the poverty of the mountaineers was diminished, and the Canary industry fell off more and more. At present only fine singers are bred in the Hartz, and for these the dealer must pay a high price. The industry was then transferred to Eichsfelde, in the province of Hanover, where there are many very poor weavers. Nearly all these are now engaged in breeding the cheaper varieties of Canaries. The industry exists also in the poorer districts of Hesse, in the great Luneburg Moor, in parts of Westphalia, and among the Sudetic Mountains (Erzgebirge) in Saxony. In the fruitful districts of the province of Hanover, where there is not so much suffering, the business is not carried on so extensively. In recent years large numbers of birds have been bred in the cities, chiefly as a pastime. The extent of the Canary-breeding industry is shown by the fact that about 250,000 Canaries are bred every year in Germany. Among the foreign markets, the first is the United States, which takes, in round numbers, 100,000 birds annually. Next in importance is the English market, which takes about 50,000 per annum. Then come Brazil, Chile, the Argentine Republic, and Australia. To these countries salesmen are sent with Canaries every year. The remaining birds, especially the finer Hartz Mountain birds, are sold in Germany, where more value is attached to fineness of song, and where higher prices can be obtained than anywhere else. The average price for ordinary Canaries is from three to four marks for males. Hence the Canary industry adds about 1,000,000 marks per annum to the national wealth of Germany, and this amount goes chiefly into the hands of the poorest class. The growth of the industry is said to be due to two causes—(1) the German bird-dealers have already been very enterprising; and (2) the Canaries bred in Germany are said to sing better than any others. About two-thirds of the Canaries exported annually from Germany to the United States are imported by a German resident of New

York, whose German home is at Ahlfeld, in the province of Hanover, whither the birds are brought from all parts of Germany. At Braunlage, in the Hartz, this dealer has a factory which is capable of turning out every day the material for a thousand bird-cages. This material is given out to the peasants, who make the cages at home. From Ahlfeld the birds are shipped to New York *viâ* Bremen, accompanied by attendants. Each attendant has under his care about a thousand birds, each in its own little wooden cage.—*Journal of the Society of Arts.*

FISHES.

Large Carp in Sussex.—The Great Pond at West Harting, Sussex, has long been famous for its Carp, and doubtless in olden times (16th century) supplied a goodly number of these and other fish for the refectory of the monks of Durford Abbey, the ruins of which may be seen at no great distance. In the autumn of 1858, when this pond was cleared out, there were counted 900 Carp, one of which measured 34 inches in length, and weighed $24\frac{1}{2}$ lbs.; 300 Tench; more than 1000 gold-fish; and at least a ton weight of eels, besides a Pike weighing $27\frac{1}{2}$ lbs., in the act of digesting two Carp of 4 lbs. and 2 lbs. respectively. The monster Carp above referred to has been recorded as the largest taken in English waters, and has been figured (from a photograph taken by the late Mr. John Weaver, of Uppark) in Manley's 'Notes on Fish and Fishing' (1877), as well as in the 'History of Harting,' by the Rev. H. D. Gordon, published in the same year. In 1862 this pond, which once covered thirty acres, was again fished, and on that occasion, although the largest Jack did not exceed 18 lbs. and the largest Carp 13 lbs., upwards of 22 cwt. of Carp and Tench were taken, and nearly 8 cwt. of eels. The great Carp taken in 1858 has now been eclipsed by another which has quite recently been taken out of and returned to the same pond, and which (as we are informed by our old friend the Vicar of the parish, the Rev. Prebendary Gordon, M.A.), was ascertained to weigh no less than 29 lbs., the scales in which it was weighed having been tested by the police supervisor and found accurate. "*Carpe diem*"! we believe was the classical expression which fell from the lips of our informant on beholding this monster!—ED.

CRUSTACEA.

Nymphon and Caprella on the Coast of Sligo.—Early in September my sister, Miss Amy Warren, when searching for shells in the rock-pools on Carrahubock shore, below Enniscrone, found two specimens of *Nymphon*, one of a reddish white colour, the other grey; and a specimen of that strange-looking crustacean, *Caprella*. The latter is exactly like the figure of the *Caprella* represented in Sir Wyville Thompson's book, 'The Depths of the Sea,' with this exception, that the hooks of the pair of hooked claws

are flatter and wider than those of Sir Wyville Thompson's giant specimen, the specimen found by my sister being only half an inch in length. When closely examined under a powerful lens, it appeared a perfect miniature of that figured in 'The Depths of the Sea.' Five species of this genus are included by William Thompson in his list of Irish Crustacea (Nat. Hist. Ireland, vol. iv. p. 400).—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

NOTICES OF NEW BOOKS.

Travels amongst the Great Andes of the Equator, with Supplementary Appendix. By EDWARD WHYMPER. 2 vols., 8vo, with Maps and Illustrations. London: John Murray. 1892.

THE story of Mr. Whymper's ascent of Chimborazo and other mountains of the great Andean range was given to the public, in outline, shortly after its accomplishment, and so long ago as 1881. In that year a lecture at the Royal Institution, and a paper in the 'Journal of the Royal Geographical Society,' made us fairly well acquainted with the chief features of this notable undertaking. During the decade which has since elapsed, Mr. Whymper has been occupied in preparing for the press a detailed narrative of his travels, illustrated with numerous beautiful engravings of the scenery which he viewed, and the more interesting objects, zoological, botanical, and ethnological, which he collected.

The result is now before us in the shape of two handsome volumes, and on perusing these we have been at a loss which to admire most, the author's indomitable pluck and perseverance in carrying out his original design, or his industry in transcribing the details of his eventful journey, and in preserving, examining and describing the collections made by him under very adverse and trying conditions.

It goes without saying that Mr. Whymper's work is a contribution to geographical rather than to biological science, and that being the case, it scarcely falls within our province to criticise what must be regarded as the most valuable portion of it. Nor does the author of that delightful book, 'Scrambles amongst the Alps,' stand in need of any introduction or commendation as a practised and skilful mountaineer. His reputation on that score

has been long since established. If, therefore, we leave it to others to descant upon the services which he has rendered to geography by publishing this narrative of his travels, it is that we may have more space at command to deal with the services which he has rendered to zoology by collecting in an unexplored region, and submitting his collections to the critical examination of the specialists who have aided him in this part of his work.

It may be well, however, to observe *en passant* that one great object which Mr. Whymper had in view was to throw light on the long debated question whether human life can be sustained at great altitudes above the level of the sea in such a manner as will permit of the accomplishment of useful work, and to observe the effects of low pressure by attaining the greatest possible height in order to experience it. He therefore selected Chimborazo on account of its absolute elevation above the sea, and set forth to encamp upon this mountain at gradually increasing heights with the ultimate aim of reaching the summit.

Obviously very great pains were taken in comparing the readings of the mercurial and aneroid barometers. For the determination of altitudes, the former had to be relied upon, since, strange to say, seven selected aneroids taken on this expedition differed so materially, that even the "means" were almost valueless! The reason of this took several years to discover (see vol. i. p. 221); but Mr. Whymper at length made it out, and the results of his experiments will be found tabulated in the Appendix to his first volume.

The author's sea-route took him *via* Panama to Quayaquil on the Pacific coast, the chief port of Ecuador, whence he proceeded by river-steamer to Bodegas, and then on to Quito, the capital; the remainder of the journey having to be accomplished with mules.

Although the traveller's aim was to secure what might be found of interest in the highest zones of the Andes of Ecuador, he did not propose to examine zoologically the lower regions of that country, and for a very good reason. The latter have often been worked by professional collectors, and being easy of access, may be explored with comparatively little trouble at any time. The loftier and highest regions, on the other hand, had not previously been examined. They are more or less difficult to reach, and in consequence of the violent and rapid meteorological

disturbances which frequently occur, are well-nigh inaccessible to all except those who are well equipped and prepared to remain for some time at a considerable height. Mr. Whymper's experience in these elevated regions convinced him that the work of collection there was the most arduous that a botanist or zoologist could undertake; and it is necessary to bear these facts in mind when considering the extent of his collections. These, it appears, were mainly entomological, with a few Crustacea, some Reptilia and Batrachia, and about fifty specimens of one species of a siluroid fish. No specimens of birds or mammals are catalogued in the Supplementary Appendix (vol. ii.), although here and there throughout the narrative, allusion is made to such as were seen and identified on the route; and at p. 215 of vol. i., we find a list of the Humming-birds found on Pichincha, situate on the Equator to the north of Quito. Here Mr. Whymper remarks:—

“The first competent naturalist who devotes his whole time to this mountain will reap a splendid harvest. After he has satiated himself with beetles and butterflies, he will be able to feast his eyes on the ruby and emerald breasts, and cyanine tails of the numerous Humming-birds abounding upon it and in its neighbourhood, which include some of the most remarkable and beautiful forms that are known. * * * * There is reason to believe that when more attention is paid to the habits and habitats of these birds, it will be found that several at least of the species which are said to be confined to particular localities will be found at other places at equivalent altitudes. Humming-birds in Ecuador are obtained through the Indians. Information as to localities is principally derived from them, and probably is frequently misunderstood.”

On the dimensions of the Condor, Mr. Whymper has the following note (vol. i. p. 224):—

“The largest Ecuadorian Condor of which I have heard, is said to have measured 10 feet 6 inches from tip to tip of the wings. Most of those we saw at Antisana, and elsewhere, would not, I think, have measured so much as 9 feet.”

On one occasion, while resting on the grass, he says:—

“A great shadow suddenly appeared in our midst, and made us all alive. A Condor had dropped down, and was hovering with outstretched wings about five and twenty yards above. The deerhounds

ran in, cowering with terror, and casting furtive glances at the huge bird, whilst pressing against us trembling with fear. It was remarkable to see the fright that possessed these big dogs, when they were in perfect security amongst our large party. Shouts drove the assailant away, and presently we proceeded."

The way in which these huge birds are lassoed by the herdsmen is described (p. 205) with a graphic illustration from the pencil of Joseph Wolf.

The valley of Machachi is described as a perfect paradise for the zoologist (p. 115):—

"At first the dimensions of this great basin were underrated or unappreciated. Objects which were supposed to be a mile distant sometimes proved to be two or three miles away. Woods looked like clumps of bushes, and impassable ravines appeared mere ditches. When we became better acquainted with it, the bare almost naked-looking plain was found to contain unsuspected dells and nooks, decorated with ferns and hidden lanes, gay with Salvias, Fuchsias, and Verbenas; giving shelter to a countless population, varied in habits, and different in natures, whose range was determined by light and shade, heat and cold, moisture and vegetation; many timid and shrinking from observation, seldom straying far from the spots that were home or habitation, where they must be sought to be found.

"Pumas and Deer ranged over the high, rugged ground; Foxes, Weasels, and 'Possums, dwelt on the lower slopes; and down in the basin was a zoologist's paradise. Butterflies above, below, and around, mayflies and dragonflies dancing in the sunlight, lizards darting across the paths, spiders, beetles, and crickets in infinite numbers."

The zoological collections which were made in Ecuador were formed with the view of bringing together the species which range highest. Thus the highest positions at which earthworms were found were on Cayambe (14,760 feet), and on the summit of Corazon (15,871 feet). Two new Centipedes belonging to the genus *Newportia* were found, one on Cayambe (11,800 feet), the other on Chimborazo at an elevation of 12,000 feet. No less than 104 new species of Coleoptera were collected, and have been described (in the "Supplementary Appendix") by Messrs. Bates, Sharp, Gorham, Oliffe, and Jacoby. Leaping Orthoptera were very numerous to the height of from twelve to thirteen thousand feet, and on Chimborazo were collected in the Vallon de Carrel at 16,000 feet. Earwigs, though not numerous in the interior,

were found on Chimborazo (13,353 feet), and on Cayambe up to 14,000 feet. Dragonflies were seen higher than 12,000 feet on Pichincha and Cotocachi.

Of the Hymenoptera, the Ants only have been worked out, by Mr. Peter Cameron, but the collection included a large number of Bees belonging to more than a dozen different genera.

Messrs. Godman and Salvin, who have examined the Lepidoptera, report that twenty-nine species of Butterflies were obtained at elevations of 7000 feet and upwards, one of which *Pieris xanthodice* attains a higher altitude (9000 to 15,000 feet) than was observed in the case of any other butterfly.* A figure of this species is given on p. 357.

Amongst the Moths, Mr. H. Druce has recognised examples of twenty-three genera, some of which, as *Cidaria* and *Scordylia*, were found at an elevation of 13,300 feet, while the loftiest position at which moths were actually obtained was on the very highest point of Guagua Pichincha (15,918 feet). This moth was also the smallest of any taken in Ecuador.

Amongst the Diptera, Mosquitos were found above 7000 feet at one spot only, the elevation of which was 9000 feet. Spiders were met with on the summits of Corazon and Pichincha, and at other nearly equally elevated positions.

Crustacea were by no means numerous, but a small Amphipod, *Hyaella inermis*, of which a figure is given (vol. i. p. 361), is remarkable as having been captured in pools round about the Hacienda of Antisana (13,300 feet), and no Amphipod appears to have been hitherto obtained elsewhere at so great an elevation.

A pretty little Snake, *Coronella Whymperi*, named by Mr. Boulenger (vol. ii. p. 130) in honour of the traveller, and figured (p. 131), was found on Milligalli at an elevation of 6200 feet. Of this genus it will be recollected we have a representative in our English *Coronella lævis*, or, as Mr. Boulenger terms it, *Coronella austriaca*. The new species, however, in appearance comes nearer to *Coronella decorata*, Günther, from Mexico.

Two small Frogs (*Prostherapis Whymperi* and *Hylodes Whymperi*) have likewise been described as new by Mr. Boulenger.

* *Colias allicola*, however, a new species described by Messrs. Godman and Salvin, and figured (p. 304), is stated to have been taken on the west side of Antisana at the height of 16,000 feet.

Figures of these are given, as also of a third, *Phryniscus elegans*, Boulenger, a prettily variegated species which was found on Tanti at a height of 1890 feet.

Lastly we must not omit to notice that curious little siluroid fish *Cyclopium cyclopum*, Humboldt, of which no less than fifty-one specimens were brought home by Mr. Whymper (p. 255) to settle the question whether more than one species had been described under different names by previous writers. These were submitted to the late Surgeon-Major Francis Day, and the results of his examination of them are detailed in the "Supplementary Appendix" (vol. ii. p. 137), where a full-page plate containing three figures of the natural size is given, the verdict being that all the specimens are referable to one species which is subject to considerable individual variation.

From the foregoing remarks it will be perceived that while Mr. Whymper had chiefly at heart the advancement of geographical science, he by no means neglected the opportunities which presented themselves for acquiring some knowledge of the fauna and flora of the great mountain range which he explored. On the contrary, considering the difficulties to be overcome, the altitude at which most of the work had to be effected, and the necessity for confining within very narrow limits the amount of baggage to be carried, Mr. Whymper may well be congratulated both on the extent and the variety of his collections.

If from the geographer's point of view we have left unnoticed the most important results of his journey, it is not for lack of appreciation of their value, but because, having but limited space at disposal, we have preferred to emphasize those points which naturally possess the greatest interest for our readers, and are least likely to be dwelt upon elsewhere.

The Naturalist in La Plata. By W. H. HUDSON. 8vo, with illustrations. London: Chapman & Hall. 1892.

IN this volume we have another record of South American travel, though of a very different kind to that just noticed. While Mr. Whymper was scaling the highest peaks of the Andes in an attempt to solve certain problems having no immediate connection with zoology, Mr. Hudson was dwelling in the plains

and pampas of La Plata, devoting all his energies to an investigation of the fauna of that country; not as a collector so much as a patient and intelligent observer of the life habits of the many curious animals, both vertebrate and invertebrate, which came under his notice. The information which he has collected on this subject in the volume now before us is not only of great interest to naturalists, but, being founded on original observation, is extremely valuable, and in many instances novel.

We have been so long accustomed to find in the reports of collectors little more than a list of the species collected, with localities and dates, that it is particularly refreshing to meet with a writer whose descriptive powers enable him to transport us, as it were, to the scenes with which he himself has become familiar, there to give us an insight into the haunts and habits of creatures about which most people in this country know next to nothing. With their external forms, doubtless, we may become acquainted by the aid of museums and zoological gardens, but of their true *rôle* in life, and their mode of existence, were it not for observers like Mr. Hudson, we should remain profoundly ignorant, while the study of zoology would be deprived of half its charm.

To give an adequate idea of the variety of information to be found in this volume, on the subject of South American mammals, birds, reptiles, and insects, is almost hopeless. Commencing with a description of the desert pampas and the characteristic animals which dwell there, we are presented in the second chapter with an account of the Puma, fuller than any account we have yet met with, except perhaps that given by Dr. Hart Merriam in his description of the Adirondacks. But even here Mr. Hudson has something new to tell us. In Patagonia he heard on all sides that it was extremely difficult to breed horses, as the colts were mostly killed by Pumas:—

“As a fact wherever Pumas abound, the wild horse of the present time, introduced from Europe, can hardly maintain its existence. Formerly in many places horses ran wild and multiplied to an amazing extent, but this happened only in districts where Pumas were scarce, or had already been driven out by man. My own experience is that on the desert pampas wild horses are exceedingly scarce, and from all accounts it is the same throughout Patagonia.”

But although so destructive to horses and sheep, it will be

new to many to read that the Puma never attacks a human being:—

“In places this animal is the only large beast of prey. It is notorious,” says Mr. Hudson, “that it is there perfectly safe for even a small child to go out and sleep on the plain. At the same time it will not fly from man, except in places where it is continually persecuted. Nor is this all; it will not even defend itself against man, although in some rare instances it has been known to do so. The mysterious gentle instinct of this ungentle species, which causes the Gauchos of the pampas to name it ‘man’s friend’—*amigo del cristiano*—has been persistently ignored by all travellers and naturalists who have mentioned the Puma.”

In support of this statement several good stories of adventure are told, some of which befel acquaintances of the author. In Chapter III., entitled “A Wave of Life,” Mr. Hudson gives an account of a plague of Field Mice, belonging to the genus *Hesperomys*, which overran the district in La Plata in which he resided, just as those of the genus *Arvicola* have been overrunning of late the plains of Thessaly and the hill pastures of Scotland. In the attendant circumstances there are some curious points of resemblance, particularly in the way in which the “wave” of mice was succeeded by a “wave” of owls (*Otus brachyotus*) and Storks (*Ciconia maguari*), which preyed incessantly upon them, as did also the foxes, weasels, opossums, and even the common armadillo (*Dasypus villosus*). Of the last-named animal a very amusing account is given, including a description of the curious way in which it contrives to kill a poisonous snake (p. 72) by sawing it with the sharp edge of its carapace.

In the same chapter (on animal weapons) the author describes some of the natural methods of defence adopted by the Teguxin Lizard, the Wrestler Frog, and the Horned Toad, some of which are very singular. In succeeding chapters the following subjects are dealt with in turn,—“Fear in Birds,” “Parental and Early Instincts,” “Mimicry and Warning Colours in Grasshoppers,” “Dragonfly Storms,” “The Death-feigning Instinct,” “Music and Dancing in Nature,” and many others equally fascinating.

Mr. Hudson gives some curious instances of the paralysing effect of fear in animals. He was told by some hunters, in an outlying district of the pampas, of its effect on a Jaguar which

they had started, and which took refuge in a clump of dry reeds:—

“Though they could see it, it was impossible to throw the lasso over its head, and after vainly trying to dislodge it, they at length set fire to the reeds. Still it refused to stir, but lay with head erect, fiercely glaring at them through the flames. Finally it disappeared from sight in the black smoke; and when the fire had burnt itself out, it was found dead and charred in the same spot.”

On the pampas the guachos frequently take the Black-necked Swan by frightening it.

“When the birds are feeding, or resting on the grass, two or three men or boys on horseback go quietly to leeward of the flock, and when opposite to it suddenly wheel and charge it at full speed, uttering loud shouts, by which the birds are thrown into such terror that they are incapable of flying, and are quickly despatched.”

The “death-feigning instinct,” as Mr. Hudson terms it, which is commonly exhibited by beetles and spiders, is possessed also by some vertebrates. A familiar example is to be found in the Landrail, concerning which many instances of its feigning death have been recorded. Mr. Hudson observes that this curious instinct is possessed in a very marked degree by the Spotted Tinamu, *Nothura maculata*, the so-called “partridge” of the pampas.

“When captured, after a few violent struggles to escape, it drops its head, gasps two or three times, and to all appearances dies. If when you have seen this, you release your hold, the eyes open instantly, and with startling suddenness and noise of wings it is up and away, and beyond your reach for ever.”

These few extracts will convey but a faint idea of the variety of interesting subjects which are dealt with by the naturalist of La Plata. There is not a dull page in his book, and it is illustrated, moreover, by a number of very pretty “process-blocks,” from drawings made by Mr. J. Smit, whose name will be familiar to all who have admired his beautiful plates of animals in the publications of the Zoological Society.

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ON THE EXTERMINATION OF THE RABBIT IN AUSTRALASIA.

By MILLER CHRISTY, F.L.S.

NEARLY ten years ago, I visited, for the first time, the Canadian North-West, when I had my attention drawn to a very curious phenomenon connected with the life-history of the common Rabbit of that country, *Lepus americanus*. This animal periodically undergoes most astonishing variations in its numbers. For three or four years together, it may be quite a rare and uncommon species, only met with now and then, even if careful search be made for it. During the following three or four years, however, it increases in number to such an extraordinary extent as to become by far the most abundant mammal in the country. Then, after the maximum of increase has been reached, the Rabbits suddenly commence to die off, and for a short time continue to do so, literally by millions. Before many weeks are over, their dead bodies strew the woods in all directions, while a live Rabbit is scarcely to be met with anywhere. This remarkable phenomenon is periodically observable over the greater part, if not the whole, of the vast Canadian North-West.

When my attention was first drawn to this curious fact in Natural History, the idea at once occurred to me that it might be turned to valuable account as a means of combating the rabbit-pest in the Australasian Colonies; but it was not until public interest was aroused by M. Pasteur's proposal to exterminate the rabbits there by fowl-cholera, that I considered the

subject in earnest. The matter is now rendered of still greater interest and importance through the publication of Prof. Löffler's highly-valuable observations on the bacillus of what he calls "mouse-typhus," by means of which he was enabled to put an end, with astonishing success, to a plague of Voles (*Arvicola savii*?) which was devastating Thessaly in the spring of the present year.*

That the almost complete periodic extermination of the Rabbits in the Canadian North-West is due to some virulently-infectious epidemic disease which develops itself periodically, there seems no reasonable room to doubt. There is equally little doubt that careful study would reveal the bacillus or germ of this disease, and that this bacillus would be capable of being transported to Australia, and of being successfully communicated to the rabbits there, when it is probable that results would follow precisely similar to those now commonly observed in Canada.

It is true the American rabbit is not identical with the common English rabbit, *Lepus cuniculus*, which is the too abundant rabbit of Australasia; but the two species are so nearly identical that it is probable that a disease which kills one would be equally fatal to the other, especially as evidence quoted hereafter shows that at least four other species of American rabbit are periodically exterminated by the same, or a similar, epidemic.

This almost complete periodical disappearance of the rabbits in North-West Canada has by no means been overlooked by scientific observers who have travelled through the country. The earliest traveller who makes any reference to the matter is Sir John Richardson, who, in his 'Fauna Boreali-Americana' (London, 1829-37, p. 217), says of *Lepus americanus*:—

"This is a common animal in the wooded districts of North America, from one extremity of the continent to the other. It abounds on Mackenzie's River, as high as the 68th parallel of latitude. . . . It has numerous enemies, such as wolves, foxes, wolverines, martens, ermines, snow owls, and various hawks; but the Canada Lynx is the animal which perhaps

* For a translation of the Professor's remarks, see 'The Zoologist' for 1892, pp. 297-328. In justice to myself, I may explain that the whole of this article (with the exception of a few remarks I have now added near the end) was written years before the appearance of Prof. Löffler's observations.

most exclusively feeds upon it. It has been remarked that lynxes are numerous only when there are plenty of hares in the neighbourhood. At some periods a sort of epidemic has destroyed vast numbers of hares in particular districts, and they have not recruited again until after the lapse of several years, during which the lynxes were likewise scarce."

Prof. H. Y. Hind, in his 'Narrative of the Canadian Red River Exploring Expedition of 1857' (London, 1860, vol. i., p. 119), says:—

"The unlooked-for short supply of wild rice and fish was more severely felt in consequence of the unaccountable disappearance and death of the rabbits, which are generally found in vast multitudes in the region of the Lake of the Woods and the Winnipeg River. During the spring and summer, large numbers of rabbits were found dead in the woods, owing probably to the exhaustion which followed a severe winter, prolonged this year [1857] to an unprecedented length in these regions."

Speaking of the country on the bank of the Assiniboine, west of Portage-la-Prairie, he says (vol. i. p. 284):—"Everywhere Rabbits were numerous, and considerable areas occur covered with dead willows and aspens, barked by these animals in the winter about two feet six inches above the ground." Hind also relates (vol. ii. p. 52) that, when near the Riding Mountain, his men "dispersed to hunt Rabbits; a dozen were killed within a few minutes, skinned and placed on sticks before the fire to roast."

Archbishop Taché, in his 'Esquisse sur le Nord-Ouest de l'Amérique' (Montreal, 1869, p. 112), says:—

"The American hare abounds periodically throughout the whole extent of the 'Northern Department.' It is sometimes found there in prodigious numbers; but it is a singular fact enough that it disappears almost completely from time to time; and, after these almost complete disappearances, it increases again, growing in number for a period of three or four years; then there is abundance during the same space of time; afterwards a fresh disappearance. This period is so regular that one knows with tolerable certainty in advance when they will be numerous and when they will not. Their number in years of abundance is something fabulous. It does not need a good hunter to shoot a hundred in a day, and a good old woman, accustomed to snaring, usually exceeded this number. I have heard of twenty-five thousand killed during one winter at one single post of the [Hudson's Bay] Company."

The Hon. Dr. Schultz, in a speech before the Canadian Senate on the subject of the resources of the Mackenzie River Basin, on

March 27th, 1888, said, "Rabbits are a source of food-supply in all the forest districts, and indeed throughout the whole region, but die off periodically, as is the case further to the south and west."

Mr. F. Oliver, long resident at Edmonton, on the North Saskatchewan, says (Report of Debates in Canadian Senate, March 28th, 1888):—

"The Rabbit is, of course, found all over the wooded country of the North-West, and is subject to phenomenal increase and to phenomenal scarcity. Year after year they increase, until the country is fairly overrun with them. The Indians can live well enough in these rich years, for even blind men can kill enough for themselves. The Lynx, which lives on the rabbits, and which the Indians eat (as well as all the meat-eating, fur-bearing animals), increases greatly during rabbit years. Therefore, when the rabbits are numerous, the Indians spend the winter in comparative abundance. Then the rabbits decrease unaccountably—more rapidly than they increase. One great supply of winter food is thus cut off from the Indians themselves, and from the fur-bearing animals as well, which latter soon become scarce, either through migration or death; consequently, when the rabbits are scarce times are doubly hard with the Indians. Sometimes an abundance of deer makes up for the scarcity of rabbits, but occasionally both deer and rabbits are scarce. Then the Indians starve."

Mr. Donald Ross, of the Hudson's Bay Company, writes (*l. c.*), "Rabbits are very numerous at times in the North-West, but they periodically die out, from a disease of the throat."

Dr. J. G. Cooper says of an allied species, *Lepus campestris* (Pacific Railroad Exploration Reports, vol. xii., pt. ii., p. 87), "During our journey east of the Cascade Mountains, we saw scarcely any hares, and the Indians told us that some fatal disease had killed nearly all of them."

Mr. C. Gibbs, writing of the same region, says (*l. c.*, p. 131): "In 1853, we were informed by the Yakima Indians west of the Columbia, that a very fatal disease had recently prevailed among these animals, which had cut them almost all off."

Prof. John Macoun, in his 'Manitoba and the Great North-West' (London, 1883, p. 352), says:—

"Hares, *Lepus americanus*, are abundant in the mixed prairie and poplar forest that extends all the way across from Winnipeg to the Rocky Mountains. Some years the country seems alive with them, while other years scarcely one is to be seen. In 1872, the country in northern British

Columbia was full of them. About the middle of November of that year, a party left Fort Saint James, on Stewart's Lake, for the purpose of having an afternoon's hunting. Over sixty were shot in three hours, and the hunters claimed to be disappointed because they did not kill a hundred. During the month of September, 1875, while ascending the Clear-water River, north of Portage-la-Loche, our provisions ran short, and for some days the men snared almost enough to supply us with food. The evening we reached the Portage we were altogether without eatables, and would have gone to bed without our dinners had not a couple of squaws gone to the wood and brought us, in a few minutes, thirteen very fine hares. That same autumn every little thicket was full of them, but I have not seen a dozen since."

Mr. Ernest E. Thompson, in his 'Mammals of Manitoba' (Winnipeg, 1886, p. 19), writes of *Lepus americanus* that—

"It is said to go on multiplying for six or seven successive years, and then at length an epidemic disease regularly appears and almost exterminates the species. If this be true, there can be but little doubt that 1887 is about the last year of the series of increase, as the rabbits have multiplied to such an extent as to cause uneasiness to many persons, who are aware of the trouble a kindred species has caused in Australia. In the fall of 1886 the woods about Carberry [Manitoba], so abounded with the species that killing them ceased to be a sport. I do not think I exaggerate in saying that during the month of October I could on any one day have killed 100 rabbits with one gun. . . . During the summer the species is much subject to the attacks of the parasite tick, *Ixodes bovis*, numbers of which may often be seen hanging on the throat and neck."

My friend Dr. A. S. Thompson informs me that when at Edmonton, on the North Saskatchewan, in 1886, rabbits were extremely scarce there, but that the year before they had been extraordinarily numerous. During the previous winter (1885-6), they had been so abundant, and had so completely consumed all the available food, that haystacks—built round the houses in the town—had actually to be protected from their ravages, although, as a rule, the animals seldom leave the wooded districts. It was a matter of common talk there, at the time, that Lynxes were also very abnormally abundant; and some trappers, who were out after them at the Athabasca Landing, ninety miles north, were unusually successful, as they obtained something like 1200 lynx-skins in the course of their season's trapping. Dr. Thompson adds that, among the trappers and others then at Edmonton, it was currently believed that both the rabbits and the lynxes came

down together from regions further to the north, the latter pursuing the former, and that they never returned northwards by the way they came (that is, down the *eastern* side of the Rocky Mountains); but that the lynxes, having killed off all the rabbits, crossed the range and returned northwards whence they came, up the *western* side of the mountains. This belief, though certainly baseless, sufficiently indicates the fully-recognised fact of the simultaneous abundance of the two species, and the need of some theory of more than ordinary plausibility to account, firstly, for their extraordinary abundance, and, secondly, for their subsequent simultaneous disappearance.

The following cutting, from the 'Manitoba Free Press,' confirms much that has been already said:—

"This year [1887] an epidemic, which makes its appearance periodically, is playing havoc with the wild rabbits of Manitoba. It is reported that the dead animals are to be found lying in groups in their favourite haunts in the bush. There is a strange feature connected with the epidemic which afflicts them. When the rabbits become very numerous, the disease makes its appearance, and soon the dead out-number the living. Indeed, in the following year, scarcely a rabbit is to be found where before they were very numerous. Then their numbers gradually increase until, at the end of seven years' time, they swarm again as before the plague visited them. The epidemic does not seem to extend its influence over the whole North-West in the same year, but breaks out in different localities in successive seasons. In each case, however, it appears from the evidence on hand, that the seven years' cycle in each locality is fairly well defined. The symptoms of the attack are about as follows:—the animal's throat swells, diarrhœa sets in, and death follows."

Messrs. Coues and Allen, in their 'Monograph of the Rodentia of the United States' (U. S. Geological Survey Reports, 1877, p. 371), remark that similar epidemics have been observed among rodents, other than rabbits. Of the latter, one of the authors writes:—

"Their decrease results usually from some not very obvious cause, though sometimes supposed to be connected with a series of unusually severe winters. That this is not the sole cause of their decrease, I have been for a long time convinced; but that it is due more to some prevalent epidemic. Evidence of this is not generally easily obtainable, but proof of it in other cases is quite abundant. In the case of the little Wood Hare, *Lepus sylvaticus*, I have repeatedly met with their dead bodies in the woods

and thickets, bearing no mark of a violent death, and have noted the scarcity of this animal during the years immediately following. . . . I find also recorded in my notes a remarkable decrease, some years since, of the large Long-eared Hares, *L. callotis* var. *texianus* and *L. campestris*, in the Great Salt Lake Valley, This decrease was also accompanied by the finding of great numbers of the animals dead on the sage-brush plains about the Lake, showing no signs of a violent death, . . . leading to the conclusion that their death was due to an epidemic. So abundant had these species been for several years prior to 1869 and 1870 that some of the Mormon residents were accustomed to shoot them merely to feed their swine; while so scarce had they become in 1871, that it was with difficulty I could obtain any specimens."

I will conclude the evidence as to the prevalence of the epidemic by stating my own experience.

During the summer of 1883, I spent several weeks in the town of Carberry, about 105 miles west of Winnipeg, without seeing more than one solitary rabbit. In the summer of 1884, I was again in Canada, and spent several weeks at Carberry. At this time rabbits had become slightly more numerous, though still far from common. Yet this was the same Carberry of which Mr. E. Thompson writes, "In the fall of 1886 the woods about Carberry so abounded with rabbits that killing them ceased to be a sport." I was not at Carberry during 1886, but in the middle of April in the following year I had occasion to pass westward along the line of the Canadian Pacific Railway. I had no opportunity of alighting from the "cars," but was able, nevertheless, to gather most conclusive evidence that the extraordinary abundance of rabbits in the previous year had then been put an end to by the breaking out of the disease. On the sides of the line as it runs through the wooded country between Portage-la-Prairie and Carberry, a distance of about fifty miles, the dead bodies of the rabbits lay literally in hundreds, if not thousands. In some spots several bodies were to be seen lying near one another; and over considerable distances a dried, fluffy, white rabbit's body might be seen every few yards as the train rushed along, lying on the edge of, or close to, the line.

Much more evidence could be adduced in support of the periodic extermination of these unfortunate rabbits by means of some naturally-produced, though virulent, epidemic disease, but enough has been advanced to establish the fact beyond a doubt. It now remains, therefore, to enquire the exact nature of the

disease, and the probability of its being successfully introduced into Australia.

One word, however, first as to the extent of the great rabbit-plague in Australasia.

About 1867, it is said, a Mr. Robinson turned out thirteen wild rabbits on his run; by June, 1870, he had spent £7000 trying to get rid of them. In one day, a party of gentlemen shot no less than 2400.

Mr. C. G. N. Lockhart, a competent authority, and an old colonial, writes in 'Blackwood's Magazine' for December, 1887:—

"The destruction of rabbits should be looked upon as a paramount duty . . . of most urgent necessity. It has, in plain words, come to this:—that rabbits must be utterly subdued in New South Wales, or the colonists must once more withdraw themselves into the county of Cumberland, and there quietly await the wearing out of the pest. That time will arrive. When all vegetation has been utterly destroyed, the rabbits must lay themselves down and die. . . . On the arid, barren Riverina plains (whereon naturally not even a mouse could exist) there are pastured at present some twenty or twenty-five millions of high class merino sheep (a thing which has been made possible by means of the artificial storage of water). These sheep are being gradually eaten out by rabbits. In spite of all endeavours to the contrary, these said rabbits are gradually increasing in numbers. . . . On the south bank of the River Murray, consequently in the colony of Victoria, there is a 'station' named Kulkyne, which has about twenty miles frontage to that river. The holding extends far back into arid, naturally worthless, waterless country. On that station, by skilful management and by command of capital, there came to be pastured about 110,000 sheep. When I, two or three years ago, visited that station, I found that the stock depasturing it had shrunk to 1200 sheep, dying in a paddock at the homestead. The rabbits had to account for the deficiency. . . . On that station they had eaten up and destroyed all the grass and herbage; they had barked all the edible shrubs and bushes; and had latterly themselves begun to perish in thousands."

It was recently announced in the Legislative Council of New South Wales, by the Hon. J. Salamon, that up to the year 1883 only, 7,853,787 rabbits had been destroyed in the colony, at a cost to Government of £361,492. Adding to this sum a fair proportion of the bonuses paid in addition by stock-breeders, farmers, and others, each rabbit killed is estimated to have cost on an average about 1s. 3d. In other words, it cost as much, or more, to kill a wild rabbit in Australia as it does to buy one in

England! As long ago as 1881, too, it was officially stated in a Government Report that during the years 1878, 1879, and 1880, no less than the enormous total of 16,866,485 rabbit-skins, valued at £147,195, were exported from the colony of New Zealand alone.

It is now more than ten years since the colonists became really and seriously alarmed at the increase of the rabbits. The magnitude to which the evil has grown may be inferred from the fact that, notwithstanding the expenditure of vast sums of money, both by Government and by private persons, the number of the rabbits and the area occupied by them have increased enormously. Under these circumstances, it may well be imagined that no economic question in which the Australasian Colonies are interested is likely, for some time, to approach in importance the Rabbit Question.

It is not difficult to see how the extraordinary increase of rabbits in Australia has come about. The fecundity of all rodents is well known; in addition, the Australian climate favours a never-ending breeding season. From their natural enemies, too,—foxes, dogs, stoats, weasels, and the like,—Australian rabbits are practically exempt. It may almost be said that they are equally exempt from persecution by man, notwithstanding the prodigious exertions which have been made to destroy them; for, in a country where the population is not more than about one person to the square mile, the most active and persistent slaughter that can be carried on will, in its effects, fall far short of that accomplished by the most casual shooting, for purposes of sport, in a country like England, where the population averages 446 to the square mile.

The magnitude of the scourge is now, however, so well known in this country that it is unnecessary to say more. The Government of New South Wales would hardly have offered the splendid reward of £25,000 for an effective method of exterminating rabbits, except in a case of the very direst necessity.

The subject of the introduction of what may appropriately be called “rabbit cholera” into Australasia gained additional interest from M. Pasteur’s proposals to exterminate the rabbits there by communicating to them the disease known as “fowl-cholera.” Fowl-cholera is described, in Prof. Woodroffe Hill’s ‘Diseases of Poultry’ (London, 1886, p. 27), as “an epidemic diarrhoea, chiefly produced by an exalted temperature, defective *regime* or hygiene in the poultry-yard, and the contaminating

influence of choleraic discharges, decomposing animal and vegetable matters, impure water, and low, damp situations. . . . It affects, more or less, all kinds of birds Neither age nor sex have any influence, apparently, in its production, frequency, or severity. . . . It is rapid in its invasion and course, and its duration may vary from a few hours to two or three days." The chief symptoms are listlessness, cramp, loss of appetite, excessive diarrhœa, laboured breathing, ruffled plumage, disinclination to move, and convulsions, which become more marked until death supervenes. As regards treatment, nothing effectual is known. Diarrhœa is present throughout.

In 'Poultry' (1883, pp. 70 and 84), appears a translation of some remarks on fowl-cholera contributed to 'Le Poussin' by Mons. Jouin, who says:—

"When once it breaks out, the disease causes the most terrible ravages in the shortest time—often in spite of the separation, as far as practicable, of the healthy and ailing birds. It exactly resembles an infectious fever in the way it comes out and develops. It is in the highest degree virulent, for it is only necessary to take the smallest drop of blood from a diseased chicken and to insert it into the body of a healthy one, and in a few hours death will supervene, accompanied by all the symptoms just described. In spite, too, of its appellation, the complaint is not entirely confined to Gallinaceous birds; inoculation will produce it in the rabbit, the dog, and even the horse, according to the experience of MM. Renault and Raynal. . . . There are some animals which cannot be affected with it by inoculation. If, for example, a pig be inoculated, the animal's health will not in any way be affected thereby."

This, then, is the kind of disease which it was proposed to spread broadcast over the thriving "island continent"—a loathsome and pestilential epidemic, which when it breaks out "causes the most terrible ravages in the shortest time"; which "affects more or less all kinds of birds and various mammals"; which varies in its duration in individual cases "from a few hours to two or three days"; and for the treatment of which "no effectual curative measures are known." One may well pause before disseminating wholesale over a vast country such a frightful and uncontrollable complaint. It is little wonder that the Australians hesitated before allowing M. Pasteur's representative to test the proposed remedy.

With rabbit-cholera, however, the case is entirely different. Its existence in Canada has been known for many years, but no

one has ever yet asserted that it attacks any animals except rabbits. True, little or nothing is definitely known as to its nature, even among the highest scientific authorities; but there can be no question that scientific research would show it to be an infectious epidemic, spreading by means of bacilli, and that these bacilli would prove fully capable of being transported to our Australasian colonies and there propagated. It is also true that the Canadian and the Anglo-Australasian rabbits are not specifically identical; but it has been shown that even in America the disease is not confined to one species, while there are reasons for believing that some very similar disease has occasionally appeared amongst our English rabbits, for Daniel, in his well-known work, 'Rural Sports' (vol. i. p. 348), says:—

“Warren farmers are sometimes liable to great disorders from an epidemic disorder among the rabbits. The spring and summer of 1798 were so favourable to the breeding of the rabbits that the warrens in all parts were supposed to have never been more plentifully stocked, but great numbers of the young ones perished by a disorder, supposed to be produced by the continued wet in the autumn. It was infectious, and the first symptom was a swelling in the glands of the neck. The rot ensued and death soon followed.”

It is, however, imperative that very precise and exhaustive experiments as to the nature of rabbit-cholera should precede any attempt to exterminate the Australasian rabbits by its aid. It will, in the first place, be necessary to show that it is fatal to *Lepus cuniculus*. In the second place, it is essential to ascertain what other animals (both wild and domestic), if any, are affected by it. In the event of it being shown to affect any domestic animals, its value will be at once destroyed as a remedy for the rabbit-pest; but, in the absence of any definite information under this head, we are tolerably safe in assuming that rabbit-cholera will not attack domestic animals. All such questions, as regards mouse-typhus, were investigated by Professor Löffler, in that exhaustive manner which marks the work of the Teutonic man of science, before any attempt was made to put practically to the test the value of the disease as a remedy for the plague of voles.

This done, it will only remain to put rabbit-cholera to a practical test in a manner more or less similar to that adopted by Prof. Löffler with his “mouse-typhus”; and it will, I think, be admitted that, with our present knowledge of the nature of rabbit-

cholera, there seem no reasonable grounds for doubting that its effects upon the rabbits would be the same as that of mouse-typhus was upon the voles. It is seldom that the theories of the scientist, when put practically to the test on a large scale, have proved so startlingly successful as those of Prof. Löffler are reported to have done when put into actual practice in Thessaly.

I may explain that, some years ago, I laid all the details of my scheme (as herein explained) before the Government of New South Wales, and made formal application for the reward already alluded to. In the end, however, I was officially informed that the Royal Commissioners appointed to inquire into the various methods proposed for checking or suppressing the Rabbit Pest in the Australian Colonies had "decided that no scheme has been propounded for the destruction of rabbits which complies with the Proclamation made by the Government of New South Wales." On what grounds the Commissioners arrived at this conclusion was never explained to me; and, seeing that I was never invited to put my scheme practically to the test, it is hard to see how they could have had any adequate grounds for their conclusion. The offer has now been withdrawn.

With regard to my application, however, it was somewhat gratifying to find that, in the Final Report of the Royal Commissioners, issued in 1889, my scheme received more attention, and was noticed at greater length, than any other scheme of the 1400 submitted. The only objection the Commissioners were able to advance against the scheme was to the effect that, "when the rabbits have been decimated in this manner, a few years only elapse before their numbers are as large as ever." To this it might be replied that, if the colonists were in search of a means capable of exterminating the very last rabbit in Australia and of preventing the recurrence of the plague for ever afterwards, they were in search of something they were hardly likely to find. Surely they might have been satisfied if they could secure a means which, when the rabbits, in the natural course of their increase, became so numerous as to become a plague, appeared capable of all but exterminating them.

In conclusion, I desire to explain that I write from the theoretical standpoint mainly. All things considered, however, it seems that the question of introducing rabbit-cholera among the Australasian rabbits is worthy of fuller consideration.

ON THE MIGRATION OF THE YELLOW WAGTAIL.

BY JOHN CORDEAUX.

THE geographical distribution of this species is very remarkable. Mr. Seebohm (Brit. Birds, vol. ii. p. 213) has described our English Yellow Wagtail, *Motacilla raii*, as an Eastern form, its true home the basin of the Caspian, and the restricted colony in the British Islands as comparatively small and isolated,—the two being separated by the breadth of Europe,—the summer range of the Blue-headed Wagtail, *M. flava*, so nearly allied to our own bird.

Mr. Howard Saunders (Manual Brit. Birds, p. 121) says, “Although the Yellow Wagtail has been obtained as a straggler on Heligoland, Borkum, and the coast of Holland, it is only westward of Belgium that it is known as a regular migrant, and the Blue-headed Wagtail is still the prevailing species in the breeding season as far as Dieppe, west of which our Yellow Wagtail is said to predominate.”

It is recorded as breeding plentifully in North-west France, and especially in the neighbourhood of Dieppe; it undoubtedly occurs in localities in Western Europe as a summer resident, nesting locally in Belgium. It has twice nested on Heligoland, where it occurs in limited numbers on migration from the third week in April to the middle of May (‘Die Vogelwarte Helgoland’). How far its range may overlap in western and central Europe with that of *M. flava* is uncertain and not very clearly defined.

In Ireland it is a summer visitor in small numbers, and very local, but known to nest in two localities near Loch Neagh, and also near Dublin (A. G. More, ‘List of Irish Birds,’ 1885). A nest also was found by Lord Lilford on the western shores of Loch Corrib in 1853.

In the autumn it occurs regularly on passage through France and Spain, but more especially along the coast of Portugal. Colonel Irby (‘Ornithology of the Straits of Gibraltar,’ p. 110) says he has never met the English form of the Yellow Wagtail on either sides of the Straits. Since this was written, however, he has seen specimens collected near Tangiers, also near Malaga (‘The Ibis,’ 1879, p. 344). Mr. W. C. Tait (‘Birds of Portugal,’

in 'The Ibis,' 1887, p. 187) has recorded it as occurring annually on migration near the coast of Portugal from the middle of September to end of October, but it does not appear to use this route on the return journey in the spring, probably then passing northward by the east coast of Spain, and its abundance at that season at Valencia and Malaga seems to confirm the supposition.

Admitting the general correctness of the geographical distribution of the Yellow Wagtail as defined by modern ornithologists, an interesting problem arises as to the summer quarters of those great numbers of *M. raii* which in the autumn arrive on the east coast of England, presumably from the Continent by an east to west route. The movement is regular and normal, and frequently on a great scale, as the following selected notes will show:—

1885. At the Spurn, August 23rd; thousands, "the whole district ablaze with them." 24th; less numbers (Migration Report 1885, p. 43).

1889. Sept. 5th, 9th, 13th, on Lincolnshire coast; swarming.

1892. Sept. 13th, Lincolnshire coast; very heavy immigration, continuous all day, flocks, five to fifty, both adult and young, coming in across sea from east (G. H. Caton Haigh, *in litt.*, Sept., ix., 1892).

It would appear that either *M. raii* is much more numerous in those districts forming the western portion of Central Europe than is generally supposed, or that these great unmixed autumn flights come to our shores from regions more distant than the western fringe of Europe. It is curious that in their autumn wanderings they do not bring across with them any of the blue-headed birds, *M. flava*. So far we have failed to detect this species in the Humber district, although often carefully looked for. The difference in the time of migration of the two species must be considered in this relationship, for on the Continent *M. flava* is later in arriving by a month, and also earlier in departure than the English bird.

Ages ago, before the birth of the historic period, when the pioneers of our Yellow Wagtails, pushing forward like a wedge from the south, had appeared in that part of the western mainland of Europe now distinguished as Great Britain, it is probable, judging from the present known scarcity of the species in Ireland,

that that country had already become separated from the mainland. Eastward, however, their range could have no restriction, and doubtless covered all those great lost fenlands and low country formerly uniting England with the continent, including lands also now parts of Belgium and Holland, which we may reasonably suppose were then, as at the present day, locally frequented by them in summer.

During and subsequent to the invasion of the intruding waters from the north, Yellow Wagtails, in the vernal migration, would pass by the east coast of Spain and along the valleys of the Rhone and Seine to the shores of the newly-formed sea, the main body crossing to England, and a narrow stream also following the western shores of the continent to the limit of their range. In the autumn the English Yellow Wagtails, then as now, passed directly south to Africa by the west coast of Europe, and those of the species nesting on the continent may have used the same route—an ancient bird-path which their ancestors had followed for ages—and to reach which they now had to cross a great sea covering no inconsiderable portion of their former summer quarters—an a land passage now turned into 'a water passage. A route most circuitous when compared with the obviously more direct and shorter migratory lines followed by *M. flava*.

It seems, then, highly probable that this apparently devious and erratic course now followed by *M. raii* to the east coast of England in the autumn, may be the survival of some very ancient bird-line, still persisted in, although perhaps the necessities, or special causes, which first induced its use may be in abeyance or altogether become obsolete. Undoubtedly these bright little autumn wanderers are, in their own way, telling some very old story, and it remains to ornithologists to try and interpret it.

In conclusion, we think there is sufficient evidence that large numbers of our English Yellow Wagtails cross from the Continent in the autumn to migrate across England and following a south-westerly line.

ON THE RECENT OCCURRENCE IN THE BRITISH ISLANDS OF THE RUDDY SHELDRAKE.

By F. MENTEITH OGILVIE, M.A., F.Z.S.

PERHAPS the most remarkable ornithological event of the present year has been the appearance of Ruddy Sheldrakes, *Tadorna casarca*, on various parts of the British coast, in comparatively speaking large numbers. Between the 20th of June and the middle of September not less than sixteen specimens were obtained. Of these, Ireland claims eight, Scotland two, and England six. The actual number of Ruddy Sheldrakes that visited the country it is difficult even to guess at, owing to the same flock being recorded from several different localities; but it must have been considerable, and quite unprecedented in the annals of British Ornithology.

The position which the Ruddy Sheldrake holds in the British list has been frequently challenged by naturalists, and there can be but small doubt that a certain proportion of the specimens previously recorded were unopinioned birds that had escaped from private waters—an observation which particularly applies to those taken in the depth of a hard winter, at which season there is little possibility of a wild Ruddy Sheldrake appearing on our coast, and every probability of a frozen-out tame bird being forced to shift its quarters. But the Sheldrakes recently recorded stand on a very different footing, and the points in favour of their being genuine wild birds are so strong that even the most sceptical will, I hope, be convinced by the evidence.

In the following pages I have endeavoured to bring together all the published occurrences, most of which have already been communicated to 'The Field' or 'The Zoologist'; but I have now been enabled, by the kindness of several correspondents, to add dates and other particulars that were previously wanting. After some hesitation I decided to divide the list into two parts: (1) The Irish Sheldrakes, to which are added those from the Solway district; (2) The Scotch and English (E. coast) Sheldrakes. This division may be, and probably is, an entirely artificial one, but seems more convenient for reference than taking the records

in chronological sequence and writing them down in one unbroken list.

The period embraced by these notes extends from the middle of June to the middle of September. It will be seen that the last ten days of June and first week in July was the time during which most of the birds were noted: towards the end of August and in September the specimens obtained were generally solitary birds, the flocks having by this date left our shores, or been exterminated.

IRELAND.

June 24th (or 25th). A flock of "about 20" near Adara, Co. Donegal. One (female) shot. On being shot at, the birds flew over the sand-hills and out to sea; three returned following morning, and stayed for ten days; the larger portion of the flock were not seen again after they had been once shot at. (J. Steele Elliott, 'Zoologist,' Aug. p. 311, and *in litt.*)

June 26th. A wounded bird came ashore at Skerries, Co. Dublin (female). A flock of seven were seen in the same neighbourhood at (or about) this time; two others were shot, but "allowed to go to the bad." The man who obtained the wounded Sheldrake reported "A good many more birds of the same kind seen on some islands that lie about a mile from the shore." ('Field,' Aug. 20, 1892; E. Williams *in litt.*)

July 7th. One shot near Drogheda, at the mouth of the River Boyne (female) ('Field,' Aug. 20, 1892; E. Williams *in litt.*)

July 7th. One shot out of a flock of six, between Limerick and Foynes (female). Flock reported as very shy and difficult of approach. (E. Williams *in litt.*)

Aug. 4th. Three *seen* at a distance of about 70 yards, Ballyshannon, Co. Donegal. (W. A. Hamilton, 'Field,' Aug. 20, 1892.)

Aug. 18th. One shot out of a flock of six, near Inch, Co. Donegal ("a young male"). (D. C. Campbell, 'Field,' Aug. 27, 1892.)

Sept. 8th. One shot at Inch, Co. Donegal: bird reported as very wild; sex —? (Capt. R. W. Thompson, 'Field,' Sept. 19, 1892.)

ENGLAND, N.W. COAST (SOLWAY DISTRICT).

July 17th. Two seen, River Wampool, Cumberland. One shot and thrown away on a manure-heap; ultimately rescued in ZOOLOGIST.—NOV. 1892. 2 L.

more or less decayed condition, by the Rev. H. A. Macpherson. (Rev. H. A. Macpherson, 'Field,' Aug. 27, 1892, and *in litt.*)

[Since these lines were written, Mr. L. Sawray Cookson, of Broughton Tower, Lancashire, has reported ('Field,' 22nd Oct. 1892) that on Sept. 26th, when staying at Crofton Hall, near Wigton, Cumberland, he shot a male Ruddy Sheldrake on the large pond in the park.]

ENGLAND AND SCOTLAND, N., N.E. AND E. COASTS.

June 20th. A flock of five, one shot, Durness, Sutherlandshire. These Sheldrakes were reported as "not difficult to stalk." The specimen obtained was very slightly wounded, and an endeavour was made to keep the bird alive. For some ten days it seemed likely the experiment would prove successful, but the Sheldrake then began to pine, and died about July 13th. "In the course of the fortnight after June 20th" *three* flocks were seen by the observer, who had obtained the above-mentioned Ruddy Sheldrake. The three flocks appeared to keep separate: one consisted of fourteen birds, one of ten, and one of four (*i. e.* the remainder of the first flock). At the beginning of July they disappeared from the neighbourhood. (Rev. W. C. M. Grant and T. E. Buckley *in litt.*)

July 5th. A flock of eight: one (male) shot, two more injured. Thorpe Mere, Suffolk. These Sheldrakes were seen, by a most competent observer, coming in from the sea. When first noticed they were over a mile out, and flying at a considerable height (100—150 yards). They appeared to be steering due N.W., and "made" the land about half a mile north of Aldeburgh, still keeping the same elevation. On seeing Thorpe Mere, however, the flock began to lower, and, after circling round a few times, finally settled on a wet marsh, and began to feed. Having examined them with a glass, and being unable to identify them, the individual in question punted after them, and, getting three together, shot, gathering one and wounding two others. The whole flock, including the two wounded birds, rose and went off in a direction due N. or N. by E. One or other of the wounded ones returned the following day, and remained about the Mere for some weeks, but so wild as to be absolutely unapproachable either by stalking or punting. The remainder of the flock (five) were not seen again in the district. (F. M. O)

July 6th. A flock of five.* one (female) shot. Mouth of the River Findhorn, Elginshire. The remainder of the flock appeared to have stayed in the neighbourhood till towards the close of July, but had all left by August 1st. ('Field,' Aug. 6, 1892, and James Brown *in litt.*)

Aug. 3rd. Single bird (female) shot at the evening "fighting" (about 9 p.m.). Thorpe Mere, Suffolk. (F. M. O.)

Aug. 8th. Single bird (male) shot. Thorpe Mere, Suffolk. A wounded bird and very wild; was ultimately secured by a well-organised drive. (F. M. O.)

(I have little doubt that these last two birds recorded from Thorpe Mere were the two wounded on July 5th.)

Sept. 1st. Single bird shot on Humberstone "fitties," Lincolnshire, "apparently in immature plumage, and probably a female." (C. H. Caton Haigh, 'Zoologist,' p. 360.)

Sept. 13th. One (male) picked up dead on Snettisham Beach, Norfolk. (J. H. Gurney *in litt.*, and 'Field,' Sept. 24, 1892.)

("Last month two Ruddy Sheldrakes, or birds supposed to be such, were seen on Holkham Lake, which is not very far from Snettisham." J. H. Gurney *in litt.*, Sept. 19, 1892.)

A few general remarks on the distribution of the Sheldrakes during their stay in this county may not be out of place here. As regards Ireland, the Co. Donegal flock of "about twenty,"—supposing, as seems probable, they were the source from which most of Irish records spring, must have crossed overland,—or coasted round to the east side of the island, some appearing at Skerries, Co. Dublin, on the 26th of June,—that is, one or two days after they had been observed in Co. Donegal. A flock of seven were reported "between Limerick and Foynes," on or about July 7th, but, with this one exception, none seem to have been observed on the S., S.E. or S.W. of Ireland, the head-quarters apparently being the N. and N.W. Whether the Solway birds (two) were of Irish origin is of course merely conjectural, though it would seem not unlikely that this was the case. At any rate they were the only birds recorded from the W. coast of England and Scotland. Of the Scotch birds those seen at Durness,

* The number of this flock is given in 'The Field' as "six or eight," but Mr. Brown writes ". . . also by careful inquiry I find five was the number of the flock of Ruddy Sheldrakes that appeared on the River Findhorn."

Sutherlandshire, June 20th, were the earliest observed in Great Britain, and they appear to have stayed in the neighbourhood until the first week in July; so that, if this statement is correct, they must have been entirely distinct from the Irish birds.

The Suffolk flock of eight comes next on the list, July 5th, and it is a curious fact that a flock of five were seen in Elginshire on the following day, suggesting, as it does, that the Suffolk birds might have coasted north without resting till they reached the mouth of the Findhorn. Be this as it may, I could not learn, after making careful inquiries, that any Sheldrakes were seen at this time in Norfolk (J. H. Gurney), Lincolnshire (J. Cordeaux), or Yorkshire (J. Cordeaux, T. H. Nelson). On the other hand, it is quite possible that the Findhorn birds may have been a part of those previously seen in Sutherlandshire; but it is rather remarkable that the Suffolk flock, consisting of five uninjured birds, should have disappeared as entirely as they did.

The only other English records are the Lincolnshire and Norfolk specimens, both shot in September, and seeming to indicate that what Sheldrakes were left were then working their way south towards their winter quarters.

The total number of specimens given in this list is sixteen, but three of these were thrown away and destroyed, *viz.*, two birds at Skerries, Co. Dublin, and the Solway specimen. This latter was exhumed, by the energy of the Rev. H. A. Macpherson, from its unsavoury resting-place, and the remains, though useless for preservation, served to identify it beyond question, and give the Ruddy Sheldrake a place in the county fauna. Of the sixteen specimens the sexes were ascertained in ten cases—four males and six females.

It is more than likely that this list is not a complete one. I may have omitted some of the *published* records, despite some care to the contrary; while it is almost certain that all the specimens obtained have not been recorded in print, some being thrown away at the time they were shot, as being in "poor feather" and useless, and others preserved in out-of-the-way farmhouses, and no mention made of them even in the local papers.

It still remains to point out briefly those facts which favour the supposition that these Ruddy Sheldrakes were genuine wild birds. The chief argument against their being wild is the undoubted rarity of this duck in northern Europe, coupled with the

fact that large numbers are kept in semi-confinement in this country, and not unfrequently escape when unpinioned.

In Norway, Sweden, Denmark, and northern Germany, the Ruddy Sheldrake is extremely rare, while Holland, Belgium and France do not appear to have yielded even a single specimen. This rarity is the more surprising seeing how extensive the breeding-range of this duck is, reaching from China and Japan in the East to the extreme South of Spain in the West. In Southern Russia it breeds commonly, extending as far north as lat. 55°, or thereabouts, going southward in autumn, and wintering on the southern and south-eastern shores of the Mediterranean basin.

It is to these Russian birds, in my opinion, that we are indebted for the recent appearance of the Ruddy Sheldrake in Great Britain. Those that visited this country being non-breeders, who probably accompanied the older birds on their northern journey in the spring, were driven away by them from the breeding-grounds, lost their bearings, and, crossing Russia and the North Sea, found themselves landed on our inhospitable shores.

The following are some of the chief reasons for supposing them to be wild:—

(1). Their appearance in large numbers and at approximately the same time (*i. e.* end of June and commencement of July).

(2). Their appearance in widely-separated localities (*e. g.*, Co. Donegal, Sutherlandshire, and Suffolk).

(3). The perfect condition of their flight-feathers. In no case that I could hear of did the primaries show any signs of having been tampered with. One curious point in connection with their plumage, however, was the extremely worn and threadbare condition of the tertials: the various correspondents who were kind enough to give me particulars concerning their specimens all noted this fact. I have often observed in birds that the tertials suffer more than other feathers, and are very shabby just before the moult, but have never seen it so strongly marked as in these Sheldrakes.

(4). Their age: second year (or possibly more).

(5). Their wildness (most observers were agreed on this point).

(6). Their long flights (*e. g.*, the Suffolk flock, which vanished after leaving Thorpe Mere: none were heard of at this time

within 200 miles on either side, yet they could hardly have touched on the Norfolk or Lincolnshire coasts without their being recognised.

(7). In the case of the Suffolk birds the flock was seen coming in from the sea. Of course an escaped flock *might* fly out to sea and return again to land, but the chances are against their doing so.

(8). The entire absence of any records of escapes. This seems a strong point in favour of their being wild. If these birds were escapes they must have escaped in flocks—in one case of twenty, and others of fourteen, ten, and eight. It is hardly possible that great batches of birds like these could leave ornamental waters without the proprietor being aware of the fact. There were perhaps some forty or fifty Ruddy Sheldrakes in Great Britain at the commencement of July, yet not one single Sheldrake, so far, has been publicly notified to have escaped.

(9). The improbability of being suddenly *deluged* with escapes this year, when in former seasons even escaped birds have been anything but common.

(10). The fact that every specimen obtained has been shot on or quite close to the coast, none being recorded from inland waters.

In conclusion, I should like to thank the numerous correspondents, to most of whom I was entirely unknown, who have freely given—often at great length—all the information at their disposal. Without their assistance it would have been impossible to have gathered together these records, and whatever interest this paper may possess is due to their ready and kindly help.

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY J. H. GURNEY, F.L.S.

DURING the winter of 1891-92 there was nothing very remarkable to report. Mr. Cole had two Egyptian Geese, and Lord Kimberley saw three Goosanders on his lake, and a Goose which he judged to be a Bean Goose. A young Black Guillemot was picked up alive on the shore at Cromer, and taken to Mr. White, the birdstuffer's, where I saw it. A Sea Eagle frequented Holkham, and was seen by Colonel Feilden and

Mr. Napier, but was not shot, I am happy to say. Three Mute Swans were shot at Ranworth, and Mr. Patterson noted that a great number of Coots were driven from the inland broads to Breydon, which is near the sea.

My diary records that on January 12th, 1892, Mr. Pashley reported a Shag from Cley; and on the 15th a couple of Bitterns were shot at Barton, and one the day before at Somerton—a small bird, and remarkable for the breadth and rufous character of the stripes on its foreneck, which in some specimens are very inconspicuous. On the 16th, a French Partridge, with the whole of the breast and belly white, was shot near Attleborough. My father had one pied in just the same way from the same district (killed in 1873), showing that this peculiarity will crop out from time to time. On the 25th two Eider Ducks were shot at Cley, where two others were killed about the 11th, all females—far commoner than adult males on our coast of Norfolk.

On the 1st of February a Lesser Spotted Woodpecker was found dead at Norwich Hospital, in a glass verandah, where it had apparently gone for warmth and shelter. Hunt speaks of their visiting Rose lane, which is quite in Norwich. The weather was not cold, indeed the day before Sky Larks were rising singing; but this soon changed, and we had wind and hail on the 2nd, and a few days afterwards the weight of snow brought down a silver fir ninety-six feet long and eleven feet in circumference. Ducks were more plentiful than before, and an immense concourse on Holkham Lake was reported by Col. Feilden throughout the month. On the 18th the thermometer fell as low as $9^{\circ}5'$, nearly touching the lowest record of 1891. The day before Mr. Gunn saw seven Tufted Ducks on Ranworth Broad, always a favourite resort of this species, and the 19th he saw a great many Wigeon at Hoveton. A pair of Pintails, *Dafila acuta*, were shot on the 29th at Cley, but though in good plumage they were very small, the female only weighing 1 lb. 5 oz. Several Pintails, as I heard from Mr. Patterson, were seen near Yarmouth, and twelve were afterwards sent me alive from Nacton decoy, near Ipswich; they were in excellent health, and by the end of June had scarcely changed a feather.

There were a few Brent Geese at Cley on March 6th, and about 150 Mallard at Fritton on the 13th, but no Grebes. A Chiff-chaff—first of the summer migrants—was seen by Col. Feilden

on March 24th; and Mr. Southwell heard of a Hoopoe "found dead" at Walcot on April 18th. The parish of Keswick was, as usual, full of Redstarts, and a brood hatched off in a pump. The female appeared to have a white forehead.

A nest of three perfectly white Blackbirds with pink eyes and yellow beaks was found at Harleston, and the finder realised £5 for them. The exact date of this and the next event I do not know. A stack having been thrashed by Mr. Trafford, at Wroxham, which is near Hoveton Gullery, was full of mice, which the Black-headed Gulls soon found out. They came in numbers and made a meal of the mice as they tried to escape, the quick eyes of the Gulls detecting many which but for them would have got away. Some birds of this species, which I used to keep alive, ate toads, leaving their picked skeletons by the pond they came from.

On June 24th an Owl killed a young Pheasant at Northrepps, severed the head from the body and ate most of its back. Next morning it was trapped on the Pheasant, and proved to be a Long-eared Owl. The Pheasant was six weeks old and a well-grown bird, quite two-thirds the size of the Owl, which latter had nothing inside it but the pheasant's feathers, some of which I enclose for your inspection. The Barn Owl, as Mr. Nicholson says (p. 271), is "a true farmer's friend," and very rarely touches game, but I cannot altogether exculpate the Long-eared Owl.

An Eared Grebe, accompanied by some young ones, of which it may or may not have been the parent, was seen at Rockland, on July 28th, by Messrs. E. and W. H. Bidwell (see p. 358). They disappeared into the reeds, and none of them were visible next day on the broad, which is choked with weeds and full of Pike.

Mr. G. Smith reported an immature Two-barred Crossbill at Yarmouth on August 7th. A white variety of the Common Sandpiper was seen on the 18th, at Cley, by Mr. Pashley, who was too near to allow of any mistake, besides being much too familiar with all kinds of Cley birds; but it was not to be seen when I was there the next day. On the 29th a Siberian Pectoral Sandpiper was shot at Breydon, of which full particulars have already appeared (p. 356). The sternum, which was, I believe, sent to Professor Newton, measured 1.1 in.

On September 2nd, a female Grey-headed Wagtail on the beach at Cley. The following day a pied Wheatear was seen at

Cley, and a Scarlet Grosbeak was stated to have been caught alive by birdcatchers at Yarmouth. A young male Ruddy Shelduck was washed ashore, on the 13th, at Snettisham, near Lynn, and there is every reason to regard it as a valid addition to the list of Norfolk birds, though, by a coincidence, Snettisham is the same parish in which an escaped Ruddy Shelduck, belonging to the late Mr. Coldham, was shot in 1869 (see 'Zoologist,' p. 1909). On the 14th I received a young Shoveller and a young Tufted Duck from Saham Mere; the former had a pink breast and bluish wings. The following day a young male Ortolan was shot by Mr. Gunn at Cley, where there were very few birds until the 21st, when large numbers of Redstarts put in an appearance, and a few Blue-throats, speedily followed by a great flight of Robins, with a Wryneck or two. On the 24th Mr. Pashley had a Grasshopper Warbler brought up from the beach, presumably a young male, as its throat was spotted.

The autumnal waves of migration, whether Grallatorial or Insectorial, which pass Cley are very interesting. Some particular species always predominates, and that species, it may generally be predicted, will be comparatively rare the following year, though indeed there are not wanting some instances to the contrary. During the present autumn there have been large numbers of Bar-tailed Godwits at Blakeney and Cley; some of the flocks which passed over were estimated by Mr. Gunn to contain as many as seventy or eighty birds. Mr. Pashley, in sending me fifteen, all apparently immature, and varying much in the purity of the lower part of the back, wrote that he had had so many that he had to throw some away. They will probably not appear in their usual numbers for the next few autumns.

On Sept. 22nd a Lapland Bunting was taken at Saxmundham, and the following day one was shot near Yarmouth. On the 24th flocks of Sandwich Terns were seen at Yarmouth and Blakeney, and several, I fear, were shot. The month closed, as I learn from Mr. Southwell, with the appearance, on the 28th, of a young Roller, *Coracias garrulus*, at Burgh.

NOTES AND QUERIES.

MAMMALIA.

Large Stone in a Horse.—In the stomach of an old horse which I recently had destroyed was found a large round stone, measuring $14\frac{3}{8}$ inches in diameter and weighing 3 lbs. The horse was about 24 years old, and had been in my possession nearly 16 years, during which time he was never unfit for work till about six months since, when he had an obstinate stoppage, probably caused by the displacement of the stone. He completely recovered from it. I do not recollect a case where so large a deposit has been carried so long with impunity.—R. H. RAMSBOTHAM (Beestram, Milnthorpe).

[Is our correspondent quite sure that the stone was in the stomach, and not in the bladder; or, in other words, that it was originally swallowed, and not formed by concretion or gradual urinary deposit? —ED.]

Polecat in Worcestershire and Staffordshire. — On the 25th October, 1891, a specimen of the Polecat (*Mustela putorius*) was killed on a farm at Smethwick, Staffordshire. As there is no record for this county, or for Worcestershire, in the Editor's article on this animal in 'The Zoologist' for 1891 (pp. 281—294), it may be as well to state that the Polecat is now very rare in the Midlands, and I have never received specimens from any other locality than Smethwick. I have four other specimens in my possession: an old male, a young male, a female, and a young one a few months old. They were all killed about ten years ago, in the district between California, Worcestershire, and Handsworth, Staffordshire. The two counties adjoin here, and a few miles covers both districts, and includes the farm at Smethwick where the last specimen above referred to was killed. This is probably the only stronghold of the Polecat in the district; and I was much surprised at receiving the animal in question so recently, as I considered it banished from our locality. About seven years back, a gardener at Hazlewell Hall, King's Heath, Worcestershire, described a creature to me, which he had seen some years previously, near to a pool in the grounds attached to the Hall; his description was so accurate, that I have no doubt it was a Polecat. He had never seen an animal like it before, and I have not heard of one since, although I have been living near the spot for above eight years. This portion of King's Heath is opposite to the California and Smethwick districts, but with the wide valley of the Rea intervening.—F. COBURN (7, Holloway Head, Birmingham).

Young Squirrels.—With reference to the notes on this subject in 'The Zoologist' for March and September, 1892 (p. 328), there can be no doubt, it seems to me, that Squirrels breed much earlier in the year than stated by Bell and Macgillivray in their respective Histories of British Quadrupeds. In my 'Mammalian Fauna of the Edinburgh District,' published recently, I ventured, on the strength of my own limited experience (I was not then aware of Mr. Blagg's remarks and your editorial note), to question the accuracy of the statements of these authorities, and I am pleased to find that others have had experience similar to mine. In 1890 I knew of a Squirrel's nest containing well-grown young on 23rd April, and several other instances of young in April have come under my notice in previous years. An instance of young being found in a nest in this neighbourhood in the month of August is also known to me. From a dealer in birds and other animals in this city (Mr. Dewar, St. Patrick Square), I learn that he obtains young Squirrels almost every year from the South of England, at the end of March or early in April, and that on the last day of February in the present year, he saw in London three quite small ones being suckled by a cat. I hope other readers of 'The Zoologist' will record their experience on this interesting point.—WILLIAM EVANS (18A, Morningside Park, Edinburgh).

Daubenton's Bat caught with a Trout Fly.—On the evening of the 14th June, 1890, a gentleman, while fishing in Bracebridge Pool, Sutton Coldfield, Warwickshire, with an artificial fly, hooked a Bat, which, on being brought to me, proved to be *Vespertilio daubentonii*. On dissection it proved to be a female, and contained an almost fully developed young one, which appeared to me to be of enormous size when compared with the mother.—F. COBURN (7, Holloway Head, Birmingham).

The Serotine Bat in the Midlands.—After reading your description of the Serotine (*Vesperugo serotinus*) in 'The Zoologist,' 1891 (pp. 201—205), I have little hesitation in stating that one specimen of this bat has passed through my hands. Two or three years back a lady gave me a bat which had been caught near her house, I believe at Harborne, then in Staffordshire, but now the district is included in the city of Birmingham. I was at the time convinced that the bat was new to me, for the upper parts were of a rich dark chestnut-brown, and the lower surface a pretty light gray, a variation in the colouring which I had never before seen in any of our ordinary bats. After skinning it, I put the specimen on one side, with the intention of identifying it, but was exceedingly busy at the time and it was overlooked. It has since disappeared, I know not where, for a recent

search for it has been fruitless. It was decidedly smaller than a Noctule, but it might have been a young specimen. I shall not overlook another if I have the chance to examine one.—F. COBURN (7, Holloway Head, Birmingham).

CETACEA.

Risso's Grampus in the Solway.—On the 24th Sept. last an example of Risso's Grampus (*Grampus griseus*) was taken by Mr. Blake in the Solway, near Annan. This is only the second time that this rare species has been captured in Scottish waters. The previous occurrence was in September, 1889, when some fishermen chased a herd of about ten off Hillswick, in Shetland, and ultimately drove ashore and captured six of them. Sir Wm. Turner subsequently procured four of the crania and two whole carcasses, and has since published pretty full descriptions of their outward and inward anatomy in the 'Proceedings of the Royal Physical Society' and in the 'Journal of Anatomy and Physiology.' In England, Risso's Grampus has been found in the following instances:—One was killed off Puckaster, Isle of Wight, in February, 1843; an adult female 10½ ft. long, taken in a mackerel net near the Eddystone Lighthouse on 28th February, 1870; a month later a young female was exposed in Billingsgate Market, supposed to have been captured in the Channel; a young male was taken alive in the English Channel in July, 1875, near Chichester, and was kept alive for a short time in the Brighton Aquarium; a female on February 3rd, 1886, was taken in a mackerel net about twenty miles south of the Eddystone; and lastly, on September 5th, 1887, one was stranded in the estuary of the river Crouch in Essex, and would have been entirely overlooked had not some of its bones fallen into the hands of Dr. Laver, who submitted them to Professor Flower. Risso's Grampus was originally described by Cuvier, from a specimen obtained at Brest in 1812. Four were stranded at Aiguillon, in La Vendée, in 1822. Large herds were seen in the Mediterranean Sea in 1829 and in 1854, and a specimen was taken at Nice in 1855. Sir William Turner says, in his article in the 'Proceedings of the Royal Physical Society,' that "a customary habitat of Risso's Grampus would seem to be the Mediterranean, in which sea it has been taken as far east as the Adriatic, and as far south as the coast of Algiers and Morocco, whilst Risso stated that it frequented the northern shore about Nice at the pairing season, and Paul Gervais has recorded the presence of a school of these cetaceans in the mouths of the Rhone." Professor Beneden, as quoted by Sir William Turner, gives it a much wider distribution, for specimens, he says, have been captured at the Azores, the Cape of Good Hope, Japan, the North American seaboard, and even New

Zealand. There are four adult skeletons, ten skulls, and some casts of heads and animals in the United States National Collection at Washington. These are all from Cape Cod, where they were obtained in the fall of 1875. But, upon the whole, very little is known of the distribution and habits of this interesting species. Sir William Turner says he ascertained that the Shetland specimens, like some other species of toothed whales, had been feeding on Cuttlefishes, quantities of the horny beaks and the undigested skins of the latter being found in the stomachs of the Grampuses.—R. SERVICE (Maxwelltown, Dumfries).

[We learn from another source that the lower jaw of the specimen lately captured in the Solway was submitted to Mr. Eagle Clarke, of the Museum of Science and Art, Edinburgh, and to Sir Wm. Turner, both of whom concurred in assigning it to the species named. A second example has since been obtained.—ED.]

BIRDS.

The Siberian Pectoral Sandpiper in Norfolk.—Referring to my previous communication under the above heading (p. 356), I should be glad to add some remarks upon a very typical specimen of *Tringa acuminata* which has long been in the collection of British birds in the Norwich Museum. I have now verified all the Norfolk-killed examples of *Tringa maculata*, eight in number, with two exceptions, *viz.*, Hoy's bird, killed in 1830, now in the possession of Mrs. Lescher (this has been seen by Mr. Gurney, and a photograph will be found in Babington's 'Birds of Suffolk'), and Mr. Chase's bird, killed in 1887, which that gentleman informs Mr. Gurney is not just now accessible, and find them correctly named; but on referring to the specimen mentioned by Mr. Stevenson, 'Birds of Norfolk,' ii. p. 367, it proves to be, as I have just said, an undoubted example of the Siberian form. The history of this bird is as follows. In the winter of 1848—9, the late Mr. Gurney purchased of a man named Wilmot, for the sum of £5, a Sandpiper which he stated he had killed at Yarmouth in the last week of September, 1848; this transaction Mr. Reeve, the Curator of the Norwich Museum, perfectly recollects, and he informs me that the bird was set up by Mr. Gurney's birdstuffer, Knights. The occurrence is recorded under the heading of "Pectoral Sandpiper" (*Tringa pectoralis*) in 'The Zoologist,' 1849, p. 2392, the communication being dated "Feb. 2, 1849." Subsequently the same man brought to Mr. Gurney two freshly killed specimens of the Red-winged Starling, which, upon enquiry, proved to be of very doubtful origin; and Mr. Gurney was fully convinced that an attempt was being made to deceive him; he, therefore, finding the man to be unworthy of trust, sent a second note to 'The Zoologist,' dated August 14th of the same year, and which will be

found at page 2568 of that magazine, referring to his previous communication, and concluding with the following remark:—"I fear that I was imposed upon with respect to this specimen, and that it is in reality a foreign one. On the 30th March, 1850, Mr. Gurney gave this bird (with others) to the Norwich Museum, instructing Mr. Reeve to place it in the British collection, but without any locality. Everbody who knew Mr. Gurney will be perfectly aware of the extreme caution he exercised in matters of this kind, and will not be surprised at his at once rejecting the bird in question; but I should like to be allowed to state some reasons which have led me to think that in this instance he acted precipitately. (1). *Tringa acuminata*, although described and named by Horsfield in 1820, could not have been a very well-known species to British ornithologists in 1848, and even the Pectoral Sandpiper would have been a most unlikely species for this man to have obtained otherwise than by its accidentally falling to his gun; how much more unlikely, therefore, would it be for him to obtain in any other way an example of the Siberian form. The Red-winged Starling (*Agelæus phœniceus*), on the contrary, a species frequently imported alive into this country, is by no means an unlikely bird to have been selected for a dishonest purpose, and the circumstance of an example of this bird having actually been obtained in Norfolk in June, 1843, may have suggested the deception. (2). The time of year, too, is in favour of the bird being genuine, for all the Norfolk-killed Pectoral Sandpipers which have since been obtained have occurred (with a single exception) in September or October; the bird in question, an adult in autumn plumage, is therefore appropriate to the season. (3). It seems not improbable that the large sum obtained, honestly it may be, by this man for the sandpiper, may have tempted him to fraud on a subsequent occasion. After carefully weighing the evidence *pro* and *con*, I am of opinion that Mr. Gurney, annoyed at the attempted imposition with regard to the Red-winged Starling, too hastily rejected a genuine Norfolk-killed specimen of the Pectoral Sandpiper. With this opinion Mr. Reeve, who is in a better position to appreciate the circumstances of the case than any other person now living, entirely concurs. It seems highly probable, therefore, if not an absolute certainty, that *Tringa acuminata* has been obtained twice in the county of Norfolk, and that the Norwich Museum possesses the earliest example.—THOMAS SOUTHWELL (Norwich).

Fulmar Petrel on the Irish Coast.—Until June, 1878, the only known breeding haunt of the Fulmar, *Procellaria glacialis*, within the British Isles was in the St. Kilda group of the Hebrides; but in that year some of these birds visited and bred on the island of Foula, one of the Shetlands, having arrived there, it is said, in company with the carcass of a dead whale that drifted ashore. The carcass afforded them ample food for a long time, and finding suitable breeding quarters on the high cliffs,

they took possession, and have since frequented that island as a breeding station every summer. It thus appears what a slight cause will sometimes induce birds to change their breeding haunts. In this instance a sufficient supply of food occurring just at the breeding season in the vicinity of suitable cliffs caused the Fulmars to remain that summer, and probably the young birds which were reared there that season returned the following one, and have now with their own progeny become the regular inhabitants of this Shetland colony. Although breeding on St. Kilda and Foula, the Fulmar very rarely visits the Irish coasts, and then only when driven south by a continuance of northerly gales. A few weakly, half-starved birds have occasionally been cast up dead by the surf on our north-west coast, generally in the months of October and November. Up to the date of the publication of Thompson's 'Birds of Ireland' only three specimens of this bird had been obtained, or at least only that number of which Thompson had any authentic record as Irish. The first obtained was shot by Capt. Hungerford on Inchyderry Island, Clonakilty Bay, Cork, in 1832; a second was shot by the Rev. Joseph Stopford at Castlefreke, also on the south coast of Cork, in October, 1845; and the third was shot on the North Strand, Dublin Bay, on the 1st January, 1846. Such was all that Thompson knew of the occurrence of the Fulmar on the Irish coast; and I have known nothing of its appearance anywhere else until the 24th January, 1857, when I found one lying dead on the Moyview shores, having drifted in with the tide of the night before from Killala Bay. This bird was in such fresh and good condition that I sent it to my old friend the late Dr. J. R. Harvey, of Cork, for his fine collection of native birds. The next occasion of my meeting with this bird was on the 24th October, 1862, when I visited the Enniscrone sands (which face the open bay, separating it from the estuary of the Moy), to search for any storm-driven birds that might be thrown ashore by the surf, from the effects of the northerly gale that had been blowing for two days. As I walked along the edge of the water, I came upon a young and an old Puffin, the latter barely alive, and while examining it, my attention was attracted by a Great Black-backed Gull some distance off, dragging and trying to tear something that was lying partly in the water, and had just been cast ashore by the surf. On reaching the place I found a Fulmar, in a most wretched condition, completely water-soaked, and so weak as not to be able to stand: as it died very shortly after, I put it into my bag. Soon afterwards I saw the Black-back, a couple of hundred yards off, watching some object that had just been cast ashore by the surf, and that he was evidently afraid to attack. Hastening up to the place, I found a second Fulmar just come ashore, and as miserable as the first, except that it was not so weak, being able to stand and walk a little, and deter the gull from attacking it. These two birds, when the sand was washed out of their feathers and the plumage dried, made beautiful specimens, which I

presented to the collection of the Dublin Natural History Society. On the 3rd October, 1865, I found another Fulmar on the same part of the sands, but though quite fresh, it had been destroyed by the gulls before I found it; and on the same date in 1867, I picked up a Fulmar, on the Enniscrone sands, so fresh and uninjured that I sent it to the Royal Dublin Society's Museum. On the 21st October, 1868, I obtained another, which is now in the Belfast Museum; and on the 4th March, 1870, I found the remains of a Fulmar that had been destroyed by gulls on the Bartragh sands. On the 20th November, 1874, I found a fine specimen on the Moyview sands, which I have had set up for myself. Again, on the 30th October, 1878, I found one near Moyview, on the Kinroe shore; and on the 14th October, 1885, I picked up a very fresh and perfect specimen at Enniscrone. The last occasion of my finding a Fulmar was when walking on the Enniscrone sands on the 5th October, 1888. Mr. Edward Williams, of Dame Street, Dublin, in reply to my enquiries, states that, with the exception of those I sent him, he has received only one other specimen of the Fulmar taken in Ireland. This was found, by Mr. Jameson, in May, 1892, on the sands of Bundoran, Co. Donegal.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

White Wagtail in South Devon.—During the early part of September numbers of White Wagtails frequented the hams at Bantham and Thurlestone, and having recently returned from a tour in Norway, where this was perhaps the commonest bird noticed, I was easily able to identify the species; but to make assurance doubly sure, I secured specimens and forwarded them to a well-known authority on the Birds of Europe, who confirmed the opinion. Hitherto this species has not been identified with the district, but I feel sure this oversight has been from imperfect information and want of knowledge of the distinctive markings of this species as compared with the White Wagtail. The same remark applies to the Tree Sparrow, which, until a specimen was shot a few years ago, was unrecognised in the neighbourhood. Since then, by continuous observation, I have ascertained that the bird is quite a common species, although extremely local, and that in the fall of the year the resident birds are augmented in numbers by arrivals from the continent.—E. A. S. ELLIOT (Kingsbridge, S. Devon).

Reed Warbler in South Devon.—This is another species which must be considered a common breeding bird in more than one locality in S. Devon. Writing on August 14th, my correspondent, Mr. W. V. Toll, who resides close to Slapton Ley, and whose brother owns the upper waters, states in his letter from which I quote:—"Dozens of the Reed Warblers may be seen on the Exe near Countess weir, in the reed bed; also in the Dart quite near Totnes, or rather the island of reeds between the Hempstone

brook and the Dart, where the horses cross at the races, and I suppose here in the Ley, hundreds breed every year. Nests I have found by dozens, built on four reeds generally, but sometimes three, so that in case the water should rise, the nest would float up and down." In a subsequent communication, received a few days later, Mr. Toll states:—"In a small piece of reeds at Torcross, now broken down by Starlings, my brother found several Reed Warblers' nests. He has taken two or three, but they are much damaged; one has eggs, and the bird evidently deserted the nest owing to the Starlings. . . . My brother tells me that the reeds were full of warblers at the end of the Ley. During a dry summer, when we were children, we used to hunt for the warblers' nests, and see who could find a nest on the longest reeds to put in the nursery: we must have taken hundreds of such nests. When I send you the nests and eggs you will be able to see for yourself how beautifully the nests are made of the tops of last year's reeds." I duly received the nests, eggs, and also specimens of the bird. Not the least interesting part of Mr. Toll's communication is the statement that the Starlings disturb the breeding warblers, for the Starlings do not flock to the Ley till August, and this is a late date for the warblers to be sitting.—E. A. S. ELLIOT (Kingsbridge, S. Devon).

Exportation of Larks and Thrushes.—Quite a trade in Larks and Thrushes is carried on between Brighton and Paris, throughout the whole of the winter season, by wholesale netting on the Brighton Downs. From a dozen to twenty hampers full of these birds (averaging about 14 lbs. per hamper) are sent off daily to Paris alone, to say nothing of those which are retained for home consumption.

The Hoopoe in Somersetshire.—On the 7th Sept. last a Hoopoe, *Upupa epops*, was shot in an orchard at Berrow, and was seen, in the flesh, at the local birdstuffer's at Burnham by my friend Mr. Wm. Stoate, who kindly sent me a notice of the occurrence. So far as I know, this is the first authenticated instance of this species having been killed in this county.—H. ST. B. GOLDSMITH (King's Square, Bridgwater).

[The late Mr. Cecil Smith, in his 'Birds of Somersetshire,' included the Hoopoe (p. 259) in these words:—"This is an occasional summer visitant, rare indeed in this county, so much so that I can find no recorded instance of its capture or occurrence." He refers, however, on the next page to one which was "seen at Monkton, near Taunton, during the months of April and May, 1866." He adds, "It was seen several times running about on a dunghill near a farmhouse, and was described as constantly erecting its crest." Besides this peculiarity, he received such an accurate description of the bird that he felt quite sure it could be nothing but the Hoopoe. Mr. Cecil Smith, however, overlooked several instances of the occurrence of this bird in Somersetshire which had been

recorded prior to the publication of his own book in 1869. For instance, about the end of April or beginning of May, 1859, a Hoopoe was shot at Piddy ('The Field,' 7th May, 1859). On the 20th October, 1860, one was shot at Weston-super-Mare, and two years previously one was obtained at the same place ('The Field,' 17th Nov. 1860). On the 10th May, 1862, the late H. Ward, of Vere Street, London, had a Hoopoe which had been sent to him for preservation from Bath. On enquiry, it was ascertained to have been shot on May 1st at Keynsham.—ED.]

Notes from Scarborough.—The weather having been fine, and the wind westerly during the whole of the autumn until October, migrating birds have not appeared in great numbers on this part of the coast. Since August I have noted the occurrence of the following species:—On Aug. 19th, two examples of the Curlew Sandpiper, *Tringa subarquata*, were obtained on the north shore; one of these (an old bird) retained the red breeding plumage to a great extent, the other was an immature bird. On Oct. 21st, an adult Greenshank, *Totanus canescens*, occurred in the same place. Little Stints, *Tringa minuta*, have passed in limited numbers, one being obtained on the north shore on Aug. 29th and another on Aug. 31st; these are the only two examples I have seen this autumn. On Sept. 17th, a male Peregrine Falcon, just completing the moult into adult plumage, was shot whilst chasing a Jackdaw. The bird had frequented some high cliffs, a little to the south of Scarborough, for about six weeks previously. Merlins, *Falco æsalon*, have been somewhat abundant. I have seen several on the coast; one, a handsome male in adult plumage, was shot on Sept. 14th. This bird was discovered breeding, during the past season, on the high moors above Scarborough, the four eggs and the male bird being brought to me for identification. The male was sitting when the nest was discovered, and was shot as he flew off the eggs. On Sept. 21st, I had brought to me an immature male Black Redstart, *Ruticilla titys*, which had been killed with a stone by a little boy near Scarborough. It was considerably lighter in colour than one (a female) which I shot some four years ago. On Oct. 14th, a mature specimen of the Red-necked Phalarope, *Phalaropus hyperboreus*, was shot whilst feeding on the north shore, and brought to me. A strong N.E. gale was blowing at the time. Not having skinned the bird at the time of writing, I am unable definitely to record the sex, but from the size ($7\frac{1}{4}$ inches in length), I should say it is a female. This is the first example I have seen in this district, and I find on reference to Messrs. Clarke and Roebuck's 'Vertebrate Fauna of Yorkshire,' that it is described as "a casual visitant in autumn and winter, of very rare occurrence." It is, however, recorded on two previous occasions at Scarborough; one, mature, in December, 1853, and in November, 1854. The fishermen tell me that the Pomatorhine Skua, *Stercorarius pomatorhinus*, is unusually abundant on the

fishing grounds this autumn. I had three brought to me on Oct. 14th, none of which, however, were in fully mature plumage. Terns of all kinds have been almost totally absent this year, the only specimens I have seen being two immature examples of the Common Tern, *Sterna fluviatilis*. Gannets, *Sula bassana*, on the other hand, have been unusually abundant off the coast during the last three weeks. Numbers may be seen fishing in their peculiar manner in the north and south bays. The sea has for some time past been alive with young Whiting, about four or five inches long, and it is probably this unusual supply of food which has tempted the Gannets inshore.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

American Stint in North Devon.—An example of the American Stint, *Tringa minutilla*, making the third occurrence of this species recorded for the British Isles, has been recently obtained here by Mr. W. B. Hawley. It was met with in exactly the same locality as the specimen secured by Mr. Rickards in 1869, but just a month earlier. Mr. Hawley says:—"On the 16th of August last, a Stint rose close to me on the mudflats of the Northam Burrows. It flew with a zigzag flight, but not nearly so impetuously as the Little Stint. It uttered a note very like that of the Little Stint, but less loud. When it had flown about one hundred yards it was joined by a pair of Ringed Plovers, and the three birds then settled. I tried to get close to them, but they rose immediately and flew out of sight. On the 22nd of August, at about 8 a.m., I met with the bird again within a short distance of the place where I had first seen it. It rose silently from a little ditch, and I at once shot it. The irides were dark brown, the bill nearly black, and the legs and toes greenish yellow. It was evidently very fat." Mr. Hawley did not attach any great importance to his specimen at the time, but two or three weeks later, on reading the account of Mr. Rickards's Stint quoted from 'The Zoologist' in 'The Birds of Devon,' it struck him that the bird in question might possibly be an example of the same species. The skin was accordingly sent to the Rev. Murray A. Mathew, who at once vouched for its identity. There were a number of Little Stints on Braunton Burrows about the same date.—H. A. EVANS (Westward Ho, North Devon).

Eared Grebe in Anglesea.—Mr. T. A. Coward states (p. 358) that he saw a Grebe of this species in Anglesea last August, and considers the occurrence unusual. I may state that I have a fairly good knowledge of the birds of this island, and consider *Podiceps nigricollis* a resident. In May last, whilst birdnesting in the vicinity of some small lakes about seven miles from here, a male Grebe of this species, in breeding plumage, flew low overhead. It returned again in about five minutes, and from the nature of the district I had no doubt at the time that the female was sitting somewhere in the neighbourhood. It is usually impossible to reach the

nest without the use of a boat. I have had opportunities of observing the nesting habits of this bird in the North of Ireland. When approached with a boat it would disappear into the water as quietly as a Dabchick. It rarely takes flight at the time, except when hard pressed by a dog. Owing to this circumstance, Grebes in general are considered much rarer than they really are. In the bays and land-locked waters of Anglesea, during winter and early spring, I see the Eared Grebe very frequently. About two years ago, during the month of January, I shot one in mistake for a Mallard. It was moonlight at the time, and the bird was flying with great velocity.—WM. BANKS (Holyhead, Anglesea).

Uncommon Birds in Somersetshire.—I drove recently to Stogursey, a village near the sea, to see a small but interesting collection of local birds, belonging to a wheelwright who has stuffed birds for people in the neighbourhood. Unfortunately he had not kept any memoranda, and so could only give me approximate dates. Among other birds in the collection, I found Baillon's Crake, *Porzana bailloni*, which was brought to him wounded, having been shot about a mile from the village in 1887; a female Crossbill, *Loxia curvirostra*, shot by himself in the village in 1877; Richardson's Skua, *Stercorarius crepidatus*, three specimens, one adult and two young birds, shot at Stolford; Gannet, *Sula bassana*, young, washed ashore at Stolford in 1880; and one or two birds whose occurrence has only been recorded a few times before in Somersetshire. Last winter, a Manx Shearwater, *Puffinus anglorum*, was blown by a storm into the rigging of a vessel at the mouth of the river, and was brought alive into Bridgwater, but died the following night; it was preserved, and is in the collection of Mr. Tucker, of this town.—H. ST. B. GOLDSMITH (King's Square, Bridgwater).

Iceland Gull on Lough Swilly, Co. Donegal.—One of these handsome birds has just appeared on the Lough, with a northerly gale, and has been disporting himself in front of this bay for an hour or two. This is the second I have seen here this autumn. Wigeon have arrived to the upland lakes already in considerable numbers, and the signs of winter are increasing.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

Woodchat in South Devon.—On the 2nd September last, whilst driving in the village of Bantam, situated at the mouth of the river Avon, I noticed a bird of this species flitting from bush to bush in front of me. I quickly got out my gun and secured the stranger, which proved to be a female, in immature plumage. According to the authors of 'The Birds of Devon,' the evidence relating to the recorded instances of this species in Devonshire is not satisfactory.—E. A. S. ELLIOT (Kingsbridge, South Devon).

Yellow-browed Warbler in Lincolnshire.—On Oct. 7th I shot a specimen of the Yellow-browed Warbler, *Phylloscopus superciliosus*, from a hedge near the sea-bank at North Cotes. It flew out of the hedge as I was walking along the bank, and I saw at once, from its quick and even flight and brighter colour, that it was not a Goldcrest. There was a fresh west breeze blowing at the time, and no sign of migration among the smaller birds, which were singularly scarce in the sea-side hedges. Probably this bird had crossed on the previous day, when the wind blew lightly from the east, bringing with it the first Snow Bunting.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby, Lincolnshire).

Introduction of Ptarmigan into the Færoe Islands.—In 'The Zoologist' for 1890 (p. 392), Mr. J. J. Dalgleish referred to Herr H. C. Müller's report that on the 21st of August, 1890, a pair of Ptarmigan were observed (on Kirkeboe Rein) near Thorshavn, with eight or ten young ones nearly ready to fly. So far the experiment appeared to be most successful, and I hoped to hear favourable accounts of increase. I regret to state that such has not been the case, and since 1890 only two Ptarmigan have been met with, *viz.* one shot in 1891 at Huisavick, in Sandoe, another in the same year Tranjisvaag, in the island of Suderoe. These birds must have flown across sea channels from the island of Stromoe, where they were originally turned out, and were killed in ignorance of that fact. In company of friends, I was three weeks in the Færoe Islands last summer, and we visited most of the islands in the group. Many of the higher hills, including the highest Slatteritinde, were ascended by members of our party, a careful look-out was kept for any traces of Ptarmigan, and inquiries were made from all shepherds met with, or those whose avocations took them to the hills, but we could neither see nor hear anything that justified the hope of Ptarmigan being still alive in the Færoes. This result is very disappointing, and it is not easy to understand why *Lagopus rupestris*, introduced from Greenland, and breeding successfully in Færoe two months after introduction in 1890, should apparently have died out. There is quite a sufficiency of suitable food in the Færoes for Ptarmigan; in Grinnell Land *L. rupestris* subsists almost entirely on *Saxitile oppositifolia*, and there is abundance of that plant on the higher hills of Færoe. The damp and comparatively mild climate of the Færoe Islands, very different from the drier and colder climate of Greenland, in winter, may have been the reason for the birds not living, and it would be interesting to see whether an importation on the same scale of the species from Iceland might not prove more successful. It is just possible that some of the Ptarmigan may be

alive and breeding on the summits of the higher hills of Stromoe and Sandoe, which we did not ascend last summer, and which are seldom traversed even by the natives, except when collecting the sheep in autumn; but I am not very sanguine that such can be the case, for the natives are most excellent observers, and the strange flight, to them, of a covey of Ptarmigan would at once arrest attention.—H. W. FEILDEN (Wells, Norfolk).

MOLLUSCA.

Spirula, Ianthina, and Velella at Lough Swilly, Co. Donegal.—On October 2nd, after a spell of stormy weather from the westward, I gathered a number of specimens of *Velella* on the shore below my house. There were also four specimens of *Ianthina rotundata*, with their floats attached, and living, and a number of the pretty little horn-shaped shells of *Spirula australis*. The last named I have never seen here before. *Ianthina* turns up not unfrequently, but very seldom alive. *Velella* (sp.?) I have not seen here for many years. It was interesting to find these three oceanic forms on a small patch of sand, and I have sent specimens of each to the National Museum in Dublin. The *Velella* appeared to be dead, though the shells were perfectly fresh. I take them to be *V. limbosa*, though I could find no trace of the characteristic fringe of tentacles.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

CRUSTACEA.

Pycnogonida from the Sligo Coast.—Miss Warren has kindly sent me the two Pycnogons recorded by Mr. Warren (p. 367) as “Nymphons.” One is *Phoxichilus spinosus*, Mont., the other *Phoxichilidium femoratum*, Rathke. Early in the summer I received *Nymphon gallicum*, Hock., from the same locality.—G. H. CARPENTER (Science and Art Museum, Dublin).

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 5th, 1892.—HENRY JOHN ELWES, Esq., F.L.S., Vice-President, in the chair.

Mr. W. H. Yondale, F.R.M.S., of Cokermonth, was elected a Fellow.

Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*.

The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by

him in the 'Entomologist's Monthly Magazine,' Oct. 1892, pp. 250—253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249—250.

Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa*, *C. edusa* var. *helice*, and *C. hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of var. *helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *C. edusa* and the var. *helice*, which was probably not exceeded in 1877.

Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells.

Mr. Gervase F. Mathew sent for exhibition two specimens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under side of the leaves of monkshood, but that the imagos had already emerged from five of them.

Mr. Rye exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemii*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchloë cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth; and varieties of *Coccinella ocellata* and *C. oblongoguttata* from Oxshott.

Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis*, and var. *arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass.

Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species,

taken at the same time, at an elevation of about 5000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species.

Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ; also, on behalf of Mr. T. Baxter, a curious Noctua taken on the sand-hills at St. Anne's-on-Sea on August 20th last, concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*; also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge, near Preston.

Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884.

Mr. C. G. Barrett exhibited a specimen of *Syrichthus alveus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming by Mr. O. Latter; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead.

Mr. P. Crowley exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes.

Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvæ of *S. pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August.

Mr. de Nicéville communicated a paper entitled "On the Variation of some Indian Euplæas of the subgenus *Stictoplaea*"; and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued.

Mr. W. Bateson read a paper entitled "On the Variation in the Colours of Cocoons and Pupæ of Lepidoptera; further Experiments."

Mr. E. B. Poulton read a paper entitled "Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings."

Miss Lilian J. Gould read a paper entitled "Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings, together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary*.

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MIGRATION IN THE HUMBER DISTRICT IN THE AUTUMN OF 1892.

BY JOHN CORDEAUX.

AMONGST the many interesting features connected with the migration of birds during the past autumn, perhaps the most worthy of record have been the two "great rushes" of migrants—the first on Sept. 20th—21st, and the second on Oct. 14th, 15th, 16th, and under precisely similar conditions of weather.

On Sept. 20th the wind shifted suddenly to N.E., with much rain and strong wind. On the morning of the 21st, on the Lincolnshire coast, as Mr. G. H. Caton Haigh writes, "I found all the hedges swarming with Redstarts; some had got as far as five miles inland. I saw many other small birds—Whitethroats, Robins, Pied and Spotted Flycatchers, Wheatears, Hedge-sparrows, and a few Blue Tits. When the hedges were beaten, the little birds came out in clouds, the Redstarts being more numerous than all the rest put together. In a hedge at North Cotes I saw an immature Bluethroat; it came out on a twig within three feet of my face; subsequently I shot it, but it fell in thick covert, and probably was only winged, as I searched, with two men, most of the afternoon without success. On the 22nd—fewer Redstarts, but more Robins—Rock Pipits had arrived." On the Spurn side of the Humber large numbers of Redstarts, Wheatears, and others were seen at the same date, and at least one Bluethroat. I see in Mr. J. H. Gurney's "Notes from Norfolk" (p. 401), that on the 21st, "large numbers of Redstarts

put in an appearance, and a few Bluethroats, *speedily followed* by a great flight of Robins." This is important, as it shows the great extent of the immigration, and affords a comparison between the two coasts of Norfolk and Lincolnshire.

The second "great rush" of birds was on the 14th, 15th, and 16th of October, and was the most remarkable I have ever witnessed, both as regards the number of species and individuals. On the 13th, wind N. and N.E. in afternoon, slight but increasing, clear and bright, heavy sea on coast out of all proportion to wind. Mr. Wm. Eagle Clarke and I walked to the lighthouse at the Spurn; but, excepting the ordinary shore frequenters, very few birds were seen by us—one Woodcock heard of, one Goldcrest seen, a few Redwings among the sand-hills and thickets of sallow-thorn, *Hippopha rhamnoides*. We had never before seen this local and spiny shrub so densely laden with berries, clustered in orange-coloured masses round stems and branches, and giving quite a rich glow to the sand-dunes which the plant covers. On our return later in the day over the same ground a few more Redwings were seen.

Shortly after midnight in the early morning of the 14th the wind got full east, with quite half-a-gale and heavy beating rain continuous to the morning of the 16th; the nights very dark, and so thick at sea during the day that a large steamboat moored a mile from the shore could only be made out at rare intervals. During this time the immigration was immense; greatest in number were Golden-crested Wrens. First I heard their notes on opening my bed-room window on the morning of the 14th, and soon saw some in the garden below; they swarmed in every hedgerow, but on Saturday, the 15th, the number had enormously increased; Goldcrests everywhere—in hedges and gardens, dead thorns and hedge-trimmings, rubbish-heaps, beds of nettles and dead Umbelliferæ, the reeds in ditches, sides of haystacks, and the thorn-fences of sheds and yards; the sallow-thorns were *densely crowded*, many found shelter in the long sea-grass, and others again crouched on the bare rain-swept sands between the sea and the dunes. Many might have been taken with a butterfly-net.

On this day I saw a very handsome Firecrest. I was standing in shelter of a big fence, watching the Goldcrests working inland up the hedge and flitting close to my face, when one tried first to alight on the stick of an umbrella which I held

horizontally over my shoulder, and then perched on a twig within a foot of my nose. I had it in view for some minutes, and never above two or three feet away. The most characteristic markings, which at once catch the eye, are the conspicuous white streak on the side of the head, the sulphur-green patches on the side of neck, and the flame-coloured or orange-vermilion crest. It was both a finer and brighter example (probably an adult male) than the one I got from near the same locality on Nov. 4th, 1889.

Next to the Goldcrests the Robins were the most numerous, swarming in every hedgerow, bush and garden. On the 16th, in one corner of the warren cottage garden, I counted up to fifty, and then gave it up. Several had found shelter in the sea-grass, and I had to be careful not to put my foot on them, so reluctant were some to rise.

On the 15th about twenty Grey Shrikes were seen, four or five together, the rest singly. On Sunday morning, the 16th, I saw seven or eight between Easington and Kilnsea warren; one trying to seize a Goldcrest in a blackthorn swarming with those little wanderers; another was hovering, Kestrel-like, over stubbles, frequently changing ground. Some on hedges; one on the telegraph-wire, and another—a fine adult male with a single wing-spot—was harassing the Robins in a garden, and subsequently I saw him apparently trying to fasten an unfortunate Goldcrest, held by the nape, on the upper wire of a spiked fence—a most useful invention for the Grey Shrike, and one which he seems quick to make use of.

Other species seen during the three days were two Rough-legged Buzzards, Long and Short-eared Owls, Rooks and Starlings (large migration of the two latter), Larks in great numbers, Ring Ouzels (many on 15th), Blackbirds, Redwings, and Thrushes; some Wheatears (all I saw were perching on rails and quick-fences), Snow Buntings (a few), Willow Wrens (very many)—these seemed much browner and with less distinct eye-streak than our local birds, which had all left by the middle of September; and now again we have quite a swarm appearing on migration with others at Spurn from over the sea, and most probably from Northern Europe. Hedgesparrows, great many; Stonechats, some; Woodcocks (first flight), Common Snipe, Jack Snipe. On the 16th a few Fieldfares and flights of Grey Crows.

Writing from Lincolnshire, Mr. Haigh says:—"The rush of

Goldcrests was quite unprecedented in my experience. I did not see any on 13th, but on 14th and 15th they swarmed in every hedge in thousands, and were so tame that they could almost be caught by hand. Robins and Hedgesparrows were also numerous; all the Thrushes, except Fieldfares, were moving, but Blackbirds not till the 15th; Ring Ouzels pretty common on 14th and 15th."

Out of fourteen Woodcocks shot on the 15th, all of which I handled, seven were probably young of the year, and had the outer web of the first primary brownish and very regularly tooth-marked throughout. In four the outer web was whitish and the marks obliterated; in the remaining three these markings were of an intermediate character—perhaps birds of the previous year. If the nature of these notches can be taken as an indication of age, then it would appear that the old and young come at the same time and in the same flight.

Writing from Heligoland, Mr. Gätke says:—"We had Red-breasts and Goldcrests on the 11th, 12th, and 13th; the former in good numbers, the latter nothing like your numbers; on the 14th only in the morning, great rush over the island, but none staying." On the Norfolk coast also, on 15th, Robins are reported as 100; Golden-crested Wrens in swarms.

In both these cases of "great rushes," which I have cited under similar meteorological conditions, great flights of migrants were evidently passing the North Sea, probably from N.E. to S.W., when the easterly gales caught them on the flank, and drove them helter-skelter on to the east coast.

NOTES AND QUERIES.

Presentation to the Rev. Leonard Blomefield, M.A., F.L.S.—An event of some interest to naturalists took place at the last meeting of the Linnean Society, held on the 17th inst., when a congratulatory address, illuminated on vellum, was presented to the Rev. Leonard Blomefield, M.A., F.L.S. (formerly Leonard Jenyns, Vicar of Swaffham Bulbeck, Cambridgeshire, but sometime resident in Bath), on the occasion of the seventieth anniversary of his election as a Fellow of the Society, and in recognition of his continuous and useful labours as a zoologist.

Mr. Blomefield was elected in November, 1822, and is now in his 93rd year. He is an original member of the Zoological, Entomological,

and Ray Societies, and joined the British Association in the second year of its existence. As the author of a useful 'Manual of British Vertebrates' (written years ago when he was an active member of the Cambridge Philosophical Society), 'Observations on Natural History,' 'Observations on Meteorology,' and sundry scientific papers in the 'Transactions' of learned societies, he is best known under the more familiar name of Jenyns, which, for family reasons, he changed some time since for that of Blomefield. He might have served as naturalist on board the 'Beagle,' having been invited to do so before Darwin, who in that capacity subsequently made the voyage famous by his delightfully written 'Journal of a Naturalist.' As it was, he published an excellent account of the Fishes collected on that expedition. He now resides at Bath, where he is the President of a Natural History Society which he founded in 1855.

MAMMALIA.

Stone in a Horse's Stomach.—With reference to a note on this subject (p. 402), and your comment thereon, permit me to say that some years ago I possessed a hunter (mare), 15 hands 3 inches, and about twelve years old, which soon after I bought her passed a small stone about $2\frac{1}{2}$ in. in diameter. Some three years later she showed symptoms of inflammation of the bowels, which made me suspect the existence of another stone. All efforts to relieve her failed, and the mare died. A *post-mortem* revealed the presence of a very large stone, which having just entered the bowels from the stomach had caused a stoppage, and of course acute inflammation. This stone, which I have by me now, weighs 3 lbs. 1 oz., is apple-shaped, and averages $4\frac{1}{2}$ in. in diameter. Like the first one, it is built up in spherical layers, and undoubtedly formed in the stomach by concretion there. It could not have been formed in the bladder, as it had barely left the stomach; and it could not have been swallowed, as, besides its great size, it does not in substance resemble any external stone. I believe the occasional formation of these stones in the stomach of the horse is a fact well known to veterinary surgeons.—WALTER CHAMBERLAIN (Harborne Hall, near Birmingham).

Importation of Hares from New Zealand.—It may interest you to hear that over 5000 hares have arrived (Oct. 24th) from New Zealand, in splendid condition, in the cold chambers of the steamer. Of course these are descendants of the stock sent out from England. They have come in such fine order that the skins alone ought to pay the whole freight.—THOMAS CHRISTY (25, Lime Street, E.C.).

Observations on the Mole.—Last May a full-grown Mole was brought to me by a boy who knew my interest in such things. He had caught it about 5.15 p.m. as it was waddling from a puddle in a road, where it had been, presumably, drinking. I made the following notes on it:—

“6 p.m. Beast very lively, squeaking like a mouse, but not so shrilly;

scratches itself all over incessantly, as if troubled by parasites. Put it on the grass. It did not burrow into the ground, but only under the grass, which was rather long. When put on a flower-bed it covered itself up in half a minute by my watch. Dug it out and placed it on a hard path, along which it scuttled quickly; did its best to turn and bite when picked up by the skin behind the shoulders.

6.15. Put it into a large empty packing-case. (I brought the case indoors, and watched the proceedings as I had tea.) In fifteen minutes it became less timid, and took no notice of being scratched on the back; very restless, though squeaking sensibly lessened; scratching continually as before. Tried to climb up the corners of the box, always falling back. Put some worms and slugs (*Arion ater* and *Agriolimax agrestis*) and a saucer of water on the floor of the box; of these it took no notice, continuing as restless as ever. It 'scuttles' (not walks or runs) on the tips of its front paws, using its hind legs very like a hedgehog.

6.30. It seized a worm with its front paws, quickly finding the end, which it began to crunch greedily for about half-an-inch, and then resumed its scratching and efforts to escape.

6.45. Similar performance with another half-inch of worm.

7 p.m. Finished last inch of worm. Increased efforts to climb corners till 7.30. I had put in a large worm eight inches long; it ate half-an-inch immediately.

7.14. More than half the worm eaten at intervals of about three minutes, always from an end. It will not sit still for its portrait.

7.40. Last half-inch of large worm eaten. Takes no notice of me as I sit watching it and moving about—in fact, it is practically blind; nor does it take notice of obstacles as it scuttles about—not even of a lighted taper three-quarters of an inch from its nose. Occasionally handles and smells the slugs, but does not eat them.

8 p.m. Turned it on to the flower-bed again, when it burrowed out of sight in half a minute; made its way under the surface for a yard in three minutes, when it went deeper and disappeared. Squeaks (of delight?) were to be heard till it went deeper. Large worms came up all round it as it burrowed, as if they knew what their fate would be if they stayed. What struck me was the continual activity of the little beast; it was not still for a second during the whole time I had it; every movement was quick and restless, showing no appearance of calm. Whatever it did, it did with all its might—eat, scratch, climb or scuttle. It did not drink any of the water.

May 29th. Same Mole (presumably) found dead in the garden near where it was turned out last night.—LIONEL E. ADAMS (Penistone, near Sheffield).

[Observations made on animals in captivity can never be so satisfactory as in a state of nature. It is well known that moles are very voracious,

that they eat quantities of worms, and will feed also on slugs. See 'Zoologist,' 1887, pp. 445, 446.—ED.]

BIRDS.

Ruff in Nottinghamshire.—The keeper at the Mansfield Reservoir shot, on August 17th, a nice specimen of this bird, which is now a very rare straggler in this county. It was by itself, in good plumage, and forms a nice addition to my county birds. I have only one other specimen, which was shot at Clipstone, also in this county.—J. WHITAKER (Rainworth, near Mansfield, Notts).

Sabine's Gull in Norfolk.—An immature female of this species, apparently a bird of the year, was caught in the shore nets, at Wells, along with several Black-headed Gulls, *Larus ridibundus*, on the 16th October, and brought to me the following day. A reference to Stevenson's 'Birds of Norfolk' shows that this is the fourth recorded example for the county. All have occurred in the month of October, and after exceptionally bad weather for the time of the year.—H. W. FEILDEN (Wells, Norfolk).

Sabine's Gull in Pembrokeshire.—On Nov. 12th I shot an immature example of Sabine's Gull, *Xema sabinii*, near the village of Amroth, Pembrokeshire. There was a strong wind blowing inshore and a heavy sea. It was late in the afternoon, almost dusk, and the bird was flying, along the surf-line, as if looking for food. It was in good condition, and is now being preserved. I am not aware that this species has been before recorded from Pembrokeshire.—CHARLES JEFFREYS (Naturalist, Tenby).

Pomatorhine Skua and Fulmar Petrel in Mayo.—On the 2nd of October a specimen of the Pomatorhine Skua was picked up dead on the sands at Enniscrone, Killala Bay. It was quite fresh and uninjured, having been brought in by the morning's tide. The specimen was nearly adult, and would probably have assumed the full plumage of maturity at the next moult, having the long tail-feathers and white breast and belly, but still retaining the speckled throat and a barred feather or two on the lower part of back and upper tail-coverts. On the 4th October, when walking along the Enniscrone sands, I found a light-coloured variety of the Fulmar, thrown up by the surf at high-water mark; and, about a quarter of a mile further on, two young Gannets; they were all dead, but quite fresh, having been brought in by the same tide that carried the Skua ashore. A few days later I picked up, at the same part of the sands, another light-coloured specimen of the Fulmar, having some dusky-coloured feathers on shoulders and wings, showing it to be a young bird.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

Buff Variety of the Swallow and Flycatcher.—On the 6th August last I obtained a very pretty buff variety of the Swallow, shot near Blagdon,

Somersetshire: those parts which are white in the normal bird were white, and those parts which are coloured in ordinary birds were of a pale buff; eyes very light in colour. In September last Mr. J. V. Hewitt, of The Elms, Stapleton, shot in his garden a Spotted Flycatcher, of which the following is a description;—Under parts white, profusely streaked with buff; upper parts buff, with the tips of the primaries and the tip of the tail distinctly darker; eyes normal.—H. G. CHARBONNIER (Clifton, Bristol).

Late Nesting of the Tawny Owl in Scotland.—In wandering through the romantic pathways of Crichope Linn on the 19th September, I was surprised to see a nest of the Brown Owl, *Strix aluco*, placed immediately under the brink of one of the deep, dark ravines that form the uppermost portion of the Linn. A couple of new-laid, glistening white eggs were in the nest. For any species, except perhaps the Barn Owl, the above date is unusually late. But, owing to the superabundance of voles, *Avicola agrestis*, the Owls began breeding very early this year, and it seems that, for the same reason, they are continuing to nest very late in the season. Although the voles on the moors adjoining Crichope have, in a great measure, diminished from their vast numbers of a few months ago, still enough remain to account for this disturbance of the Brown Owl's usual sedate breeding habits.—R. SERVICE (Maxwelltown, Dumfries).

Garganey in Holderness.—A young male Garganey, *Querquedula circia*, was shot on Sept. 19th near Easington. This is the first example observed in the Humber district in autumn which I have had to record.—JOHN CORDEAUX (Eaton Hall, Retford).

Rare Wheatear seen near Spurn.—Mr. H. B. Hewetson, of Leeds, sends a sketch of the head of a Wheatear seen by himself and two sons on Sept. 18th, near the chalk bank at Spurn. He says, "I was quite close to it for a long time; as we walked along, it flew on with a party of Common Wheatears." It was russet-coloured, with sides of the head and throat black. It may have been an adult male *Saxicola stapazina* or *S. deserta*. Presuming, however, that Mr. Hewetson's sketch is quite correct, as to the extension of the black to the lower part of the throat, it is suggestive rather of *S. melanoleuca* (Güld.), the eastern form of the Black-throated Chat.—JOHN CORDEAUX (Eaton Hall, Retford).

Barred Warbler in Holderness.—Mr. Philip Loten, of Easington, sends a skin of the Barred Warbler, *Sylvia nisoria*, a bird of the year, shot on October 19th, at Easington, by Mr. Jalland, of Hull. This is the second recorded for that locality. The specimen was exhibited by Prof. Newton, at the meeting of the Zoological Society in London, on Nov. 1st, and has been purchased by Mr. W. Eagle Clarke for the Museum of Science and Art, Edinburgh.—JOHN CORDEAUX (Eaton Hall, Retford).

Nesting of the Great Crested Grebe in the North of Ireland.—The Irish naturalist, Thompson, mentions that in his time the Great Crested Grebe bred on the large artificial lake in Hillsborough Park. I am happy to state that in this fine demesne, belonging to the Marquis of Downshire, this interesting bird still nests annually. During the spring of 1892 there were no less than five pairs on the lake, though at the beginning of the summer two pairs had left. The remaining three pairs stayed and bred, but did not begin nesting operations till the third week of June. On June 21st I obtained a boat and rowed out into the lake. There is a small artificial island in the centre, covered with willows and alders. In the branches of a willow floating in the water, about five feet from the edge of the island, was an unfinished Grebe's nest. At the edge of the lake, under the fringe of a wood, we found another nest, containing two eggs. This nest was similarly situated to the first, being a floating structure, about eight feet from the bank, resting on a submerged branch of the willow trees which fringe the lake. There was about two feet of water under the nest, and it was well concealed from above, as well as on the side next the open lake, by the branches of the willows. To a person standing on the bank behind, the nest and the eggs in it were quite conspicuous. The nest was a large mass of rotten sticks, collected from the bottom of the water, and matted together with decayed rubbish. In the middle was a very shallow depression, lined with a few fragments of half-rotted weeds. On this the eggs lay, one being quite clean, the other much stained. They were partly covered with rotten sycamore leaves. A third egg was laid later on. Some days afterwards I approached this nest from the land side. The bird was sitting, and did not leave her eggs till I was close to the bank. She then quietly slipped into the water, and swam away without diving. She remained only a short distance outside the willows, while I waded out and examined the nest. On this occasion I took the eggs, which of course were quite uncovered. This was on June 25th. On July 5th another egg was laid in the nest. I had many opportunities of studying the habits of these interesting birds during the spring and summer. I first observed them on March 30th. They were very gregarious, always keeping rather close together, generally near the island in the centre of the lake. The pairs frequently performed various antics of courtship, which were very amusing. The male and female were almost always close together, sometimes floating side by side, with their heads drawn in for a long time, and looking very like ducks; sometimes chasing one another through the water; often both diving together. The following manœuvre was very often observed:—The male and female, who had become separated for a short time, would begin to swim towards one another, with heads erected, their long necks being stretched upwards, and the crests and ruff very conspicuous, all the time uttering a curious croaking sound, compared by Mr. Seebohm

to the French word *croix*, which could be heard a long distance away. Having come close together, they would remain in the same curious attitude, with the points of their bills touching one another, as if they were engaged in earnest and confidential conversation. After this had been continued for about a minute, their necks would be drawn in, and they would continue to float side by side in the manner described above. Early in the autumn several of the birds left, but I observed one on the lake on October 16th. It was in winter plumage, the crests and tippet being almost obsolete. I have reason to believe that the Great Crested Grebe breeds in others of the small lakes in this neighbourhood.—ALLAN ELLISON (Hillsborough, Co. Down).

Eared Grebes in Anglesea.—Mr. Banks does well to express himself cautiously as to his knowledge of the birds of Anglesea, for it is quite plain that his knowledge of the birds of that island is only “fairly good.” Surely when he states (pp. 411, 412) that *Podiceps nigricollis* is resident in Anglesea, and that he has watched its nesting habits in the North of Ireland, he is mistaking the Great Crested Grebe for the Eared Grebe. If nothing else, the statement that he “shot one in mistake for a Mallard” makes this sufficiently obvious. The birds which Mr. Banks has seen so frequently in bays and land-locked waters of Anglesea, during winter and early spring, are *P. cristatus* in winter plumage. If Mr. Banks will look at the third volume of Seebohm’s ‘British Birds’ (p. 465), he will find it stated that the Eared Grebe is a rare visitor to the British Islands, on spring and autumn migration, though a few have been obtained in winter, while there is no authentic record of its ever having nested.—ALLAN ELLISON (Hillsborough, Co. Down).

[It is scarcely correct to state that there is no authentic record of its ever having nested in England. In the ‘Birds of Middlesex’ (p. 244), our correspondent will find a statement to the effect that in the ‘British Miscellany’ (p. 19, t. 70) there is a representation of a male and female of this species, with the nest and eggs, which were taken in a pond on Chelsea Common in June, 1805. Specimens of this bird in breeding plumage have frequently been met with, especially in the Eastern Counties, under circumstances which afforded presumptive evidence of its breeding. Thus, the late Mr. E. T. Booth, of Brighton, had “a full-plumaged adult and a couple of downy mites” brought to him some years ago by a marshman in Norfolk. This fact is recorded in the ‘Transactions of the Norfolk Naturalists’ Society’ (vol. iv. p. 416).—ED.]

Ruddy Sheldrake in North Devon.—At Barnstaple, last September, I saw at the birdstuffers some Ruddy Sheldrakes, which had been obtained in the neighbourhood of Woolacombe Sands, North Devon.—F. H. CARRUTHERS GOULD (Buckhurst Hill, Essex).

Ruddy Sheldrake in North Devon.—I am informed by Mr. Rowe, of Barnstaple, that three specimens of the Ruddy Sheldrake were killed on the Taw, near Braunton, in June last, by a man called Petherick. The date is of interest in connection with Mr. Ogilvie's paper in the last number.—H. A. EVANS (Westward Ho).

Notes from Devonshire.—Several Quails have been killed; one in a stubble-field at Umberleigh, North Devon, on September 2nd. A friend of mine shot one at Tedburn-Saint-Mary, near Exeter, on the 17th of that month. A Spotted Crake, *Porzana maruetta*, was picked up on the railway near Stoke, Exeter, on October 3rd, and a Hoopoe was shot at Moretonhampstead on the 4th. Several Teal and Wigeon were shot on the Exe in the early part of October, but up to the present the weather has not been severe enough for great numbers of wildfowl. I have been fortunate in obtaining a pair of Grey Plovers, *Squatarola helvetica*, near Exeter; these birds are very casual visitors to the south of this county, being more often found in the North of Devon.—WM. E. HELMAN-PIDSLEY (Fairbank House, Polsloe Road, Exeter).

[Several instances of the occurrence of the Spotted Crake in South Devon are mentioned by Messrs. D'Urban and Mathew in their recently-published work on the birds of the county, and the same may be said of the Hoopoe and the Grey Plover.—ED.]

Manx Shearwater in Somersetshire.—I note (p. 412) that the Manx Shearwater is included amongst some uncommon birds lately met with in Somersetshire by Mr. Goldsmith. It may interest some of your readers to learn that I shot one of these birds during the first week of September last in the adjoining county of Devon at the further end of Woolacombe Sands. The bird in question was close in shore, in company with a few gulls, although the weather at the time was fair.—F. H. CARRUTHERS GOULD (Buckhurst Hill, Essex).

Nesting of the Quail in Devonshire.—During the past summer and autumn Quails have been very plentiful in Devonshire, and several nests have been found.—F. H. CARRUTHERS GOULD (Buckhurst Hill, Essex).

Quail in Sussex.—At page 361, the Rev. Prebendary Gordon reports a Quail killed by a reaping-machine near Midhurst. This was at Middlehurst, in Sussex, close to where I live. Now a short time back we turned out some Quails in fields close to our house, and as I have never seen or known of any others, nor has anybody that I am aware of, I expect that this was one of those which we turned out. I think it right to state this to correct a false impression.—M. BURR (Middlehurst, Sussex).

Marked Woodcocks.—In the spring of 1891 six young Woodcocks were caught by the Duke of Northumberland's head-keeper in Hulne Park

Alnwick, and marked by attaching a piece of metal round the leg, on which was stamped "N. 91." One of these was shot in the park by Earl Percy on the 31st October last. Only three Woodcocks were seen, so that the migratory birds had, apparently, not yet arrived.—E. G. WHEELER (Estate Office, Alnwick Castle).

Notes from Sussex.—A Pomatorhine Skua, immature, was shot at Bexhill, Sussex, lately, while chasing gulls; it is a very dark bird. A female Spotted Crake was shot while swimming in the marshes near Appledore, Kent, on the 4th November. While staying at Burwash, Sussex, on the 1st May last, a man who had been felling timber at Brightling Park gave me a clutch of four Woodcocks' eggs he had taken about three weeks before; he had never seen any before, nor had any of his companions.—G. W. BRADSHAW (Robertson St., Hastings).

Honey Buzzard in Co. Wexford.—On the 22nd October last I received a bird of this species, which had been shot in a wood in the immediate vicinity of the town of Gorey. The entire plumage is of a dark chocolate-brown colour, showing scarcely any light edges to the feathers. The bird proved to be a male, and the stomach was filled with wasps, both perfect insects and larvæ.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Supposed occurrence of the Purple Heron in Lancashire.—An example of this species has been recorded from "Alderley Edge, Lancashire," by Mr. J. Pickin (Zool. 1887, p. 432), which record is repeated in the new edition (1892) of Mitchell's 'Birds of Lancashire,' and in all the reviews of that book which I have seen, as the first known instance of the occurrence of the Purple Heron in Lancashire; but the addition to the county list is a spurious one, for Alderley Edge is in Cheshire, and about seven miles from the Lancashire border.—CHAS. OLDHAM (Ashton-on-Mersey).

Tufted Duck in Norfolk.—Kindly allow me to correct an error that appears in Mr. Gurney's notes (p. 399). In the third paragraph, line 13, he states that I saw seven Tufted Duck at Ranworth Broad. This should have been printed Wroxham Broad.—T. E. GUNN (Norwich).

Bee-eater in Co. Wicklow.—On the 2nd November, Mr. John Graydon, of Delgany, shot a specimen of the Bee-eater, *Merops apiaster*, out of a flock of six which were resting in the centre of a snipe-bog some distance from that place. The bird came into my possession immediately afterwards, and proved to be a bird of the year and a female. The stomach contained the remains of three different kinds of flies and a few beetles.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Peahen assuming the Male Plumage.—At a meeting of the Linnean Society on Nov. 3rd, Mr. G. N. Douglass exhibited the train of a Peahen

which was not to be distinguished from that of a Peacock. It had been taken from a bird reared at the Castle-farm of Tilquhillie, near Banchory, N.B., and which had died at the estimated age of thirty years. For some years previously it had ceased to lay eggs, and had gradually been assuming the plumage of the male—a phenomenon usually correlated with disease of the ovaries. Such instances have been often noticed in the case of fowls, pheasants, and other birds, but never before in the case of the Peafowl.

Food of the Jay.—The following is the diet supplied to two tame Jays, showing what omnivorous birds Jays are:—The first one would eat worms, grapes, and acorns with equal avidity; but its beak could not pierce the acorn's husk until it had been partly pared off, then holding it with its foot the bird would rapidly pull it to pieces with its strong beak. In the same way, if a dead Sparrow is given to a Jay, it will stand on one part of it while with its beak it tugs at another, after the manner of a hawk. My Jay would eat the orange berries of the Solanum, if hungry, but did not care in the least for yew and privet berries. Jay No. 2 devoured peas by making a hole in the side of the pod, and after it had got them all out it would amuse itself by pulling the pod to pieces, no doubt to look for more. Sparrows' eggs dropped into the cage were adroitly caught before they reached the bottom, and a mouse or a shrew was very acceptable. Being put into the same cage as a Carrier Pigeon and a Turtle Dove, in spite of a disabled wing, and though the cage was nine feet long, the Jay soon despatched the latter by pecking its back.—J. H. GURNEY (Keswick, Norwich).

Spotted Redshank in Summer Plumage in November.—On 8th November there were eight Spotted Redshanks, *Totanus fuscus*, in Leadenhall Market; one of them, a richly mottled old bird, retaining nearly half its breeding-dress, which at so late a date was rather remarkable.—J. H. GURNEY (Keswick, Norwich).

Fork-tailed Petrel near Macclesfield.—The occurrence of a Fork-tailed Petrel so far inland as Macclesfield may perhaps interest readers of 'The Zoologist.' The bird was picked up on October 11th, two days after the stranding of the 'Sirene' in a gale at Blackpool, and was sent to me as a curiosity. Some of the feathers on the forehead are tipped with white. Does this indicate a young bird? I can find no mention of it in any description of the plumage that I have seen.—NEWMAN NEAVE (Macclesfield).

Breeding of the Cut-throat, or Ribbon Finch.—Last August a pair of Cut-throat Finches, *Amadina fasciata*, in one of my large breeding-cages, went to nest, hatched their eggs, five in number, and fed the young regularly upon Abraham's "Insectivorous Birds' food," until they were about half-grown, when one bird was carried out of the nest dead. The

other four (two cocks and two hens) left the nest about the second week of September, fully fledged, able to fly as strongly as their parents, and able also, in two or three days later, to feed themselves. About the middle of September, finding that the mother bird had commenced to lay again, I removed the two young pairs, which I placed together in a separate cage. This time the hen laid only three eggs, hatched them all, carried out one dead when the nestlings were about a week old, and continued to feed the other two. These left the nest in the first week of November, and proved to be a pair. Now the interesting point with regard to these two results is that in each case the odd bird was carried out dead, and pairs were reared. If this should prove to be invariable in the case of the Cut-throat Finch, it would argue that the parents destroyed the odd birds in order to prevent the disputes which, in other species, are frequently so serious as greatly to retard their increase. That the Cut-throat Finch is very rapidly in a condition to breed is certain, for on the morning of October 12th I found that one of my hen birds had laid an egg on the sand of its cage, and during the afternoon of the same day another egg was deposited, presumably by the other young hen. The four young birds have been together since their separation from their parents, and therefore have produced eggs when little more than two months old. — ARTHUR G. BUTLER ("The Lilies," Beckenham Road, Beckenham).

Corrections, Zool. 1892.—Page 5, line 8, for "not" read "only"; p. 8, l. 2, after "nest" insert "on 18th"; p. 8, l. 8, after "slate-coloured" insert "legs flesh-coloured"; p. 8, line 33, for "fine" read "flat"; p. 10, 1st line, before "very" insert "not"; p. 11, l. 17, for "Aresbucht" read "Areschlucht"; p. 12, l. 18, for "*palustris*" read "*alpestris*"; p. 14, l. 22, for "*Picus*" read "*Pinus*"; p. 30, l. 21, for "two with four eggs" read "three with four eggs"; p. 229, l. 16 from bottom, for "egg" read "eye"; p. 265, last line, for "Marishills" read "marisma"; p. 402, l. 3, for "diameter" read "circumference."

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Nov. 3, 1892.—Professor STEWART, President, in the chair.

Mr. W. B. Bottomley was elected.

The Rev. Prof. Henslow exhibited an instrument used in Egypt for removing the end of the Sycamore Fig, and gave some account of the mode of cultivation.

Mr. A. Smith Woodward exhibited and made remarks on some supposed fossil Lampreys, *Paleospondylus gunni*, from the old red sandstone of Caithness.

The Rev. E. S. Marshall exhibited some hybrid willows from Central Scotland, believed to be rare or new to Britain.

Mr. G. N. Douglass exhibited the train of a Peahen which had assumed the male plumage. The bird, which was reared at the Castle Farm, Tilquhillie, near Banchory, N.B., was believed to be about thirty years old at the time of its death, and for some years previously had not laid any eggs. In the opinion of the exhibiter and others present, the phenomenon was correlated with disease of the ovaries. Similar cases had occurred with fowls, pheasants, and black-game, but not, so far as was known, with Peafowl,

Mr. C. T. Druery exhibited some new examples of apospory in Ferns. namely, a specimen of *Athyrium filix-femina* var. *clarissima*, with pinnæ showing development of prothalli by soral apospori, and a seedling *Lastrea pseudomas-cristata*, showing prothalli developed aposporously over general surface of frond (pan-apospory).

Mr. J. E. Harting exhibited some live specimens of the Short-tailed Field Vole, *Arvicola agrestis*, and gave an account, from personal inspection, of the serious damage done by this little rodent upon the sheep-pastures in the lowlands of Scotland.

Mr. A. B. Rendle exhibited some seedling plants of the Sugar-cane which had been raised in this country by Mr. Veitch.

The discussion on several of these exhibitions having continued until a late hour, a paper by Prof. Henslow, "On a theoretical origin of Endogens through an aquatic habit," was by consent adjourned to the next meeting of the Society.

Nov. 17.—Prof. STEWART, President, in the chair.

Mr. F. W. Leslie was elected, and Mr. F. J. Clark was admitted, a Fellow of the Society.

The President having announced a proposal by the Council to present a congratulatory address to the Rev. Leonard Blomefield (formerly Jenyns), M.A., F.L.S., on the occasion of the seventieth anniversary of his election as a Fellow of the Society, and in recognition of his continuous and useful labours as a zoologist, it was moved by Sir Wm. Flower and seconded by Dr. St. George Mivart, that the address be signed and forwarded as proposed. This was carried unanimously. In moving the resolution, Sir Wm. Flower took occasion to sketch the scientific career of Mr. Blomefield, who is now in his ninety-third year, and to recapitulate the works and memoirs of which he is the author, under his earlier and better-known name of Jenyns. The address, which was beautifully illuminated on vellum, was then signed by those present.

Mr. George Murray then exhibited and made remarks upon a genus of Algæ (*Halicystis*) new to Britain, the species shown being *H. ventricosa* from the West Indies, and *H. ovalis* from the Clyde sea area.

Mr. Buxton Shillette exhibited an artificial cluster of the fruit of *Pyrus sorbus*, as put up for ripening by cultivators in Sussex.

A paper was then read by the Rev. Prof. Henslow, "On a theoretical origin of Endogens through an aquatic habit based on the structure of the vegetative organs." The lecture, which was very fluently delivered, was profusely illustrated, and drew forth some interesting criticism from Prof. Boulger, Messrs. Henry Groves, H. Goss, and Patrick Geddes, to which Prof. Henslow replied.

On behalf of Mr. George Lewes, who was unable to be present, a paper was read by Mr. W. Percy Sladen on the *Buprestidæ* of Japan, upon which some criticism was offered by Mr. W. F. Kirby.

ZOOLOGICAL SOCIETY OF LONDON.

Nov. 1, 1892.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, and September, 1892, and called special attention to a young Gibbon from Hainan, South China, of a uniform black colour, belonging to the species recently described by Mr. Oldfield Thomas as *Hylobates hainanus*, presented by Mr. Julius Neumann, and to a young male Malayan Tapir, *Tapirus indicus*, from Tavoy, Burmah, presented by Col. F. M. Jenkins.

Mr. E. Hartert exhibited (on behalf of the Hon. Walter Rothschild) examples of two new Mammals from New Guinea (*Proechidna nigroaculeata* and *Acrobates pulchellus*), and a stuffed specimen of *Apteryx maxima* from Stewart Island.

A communication was read from Lord Lilford, giving an account of the breeding of a pair of Demidoff's Galagos in his possession.

Prof. Bell read a note on the occurrence of *Bipalium kewense* in Ireland.

Mr. Finn gave an account of his recent zoological excursion to Zanzibar.

Prof. Newton exhibited and made remarks on a specimen of *Sylvia nisoria* lately killed in Holderness (see p. 424).

Prof. F. Jeffrey Bell read a description of a remarkable new species of Echinoderm of the genus *Cidaris* from Mauritius, proposed to be called *C. curvatispinus*.

A communication was read from Sir Edward Newton and Dr. Gadow, describing a collection of bones of the Dodo and other extinct birds of Mauritius, which, having been recovered from the Mare aux Songes in that island by the exertions of Mr. Theodore Sauzier, had been by him entrusted to them for determination. The collection contained examples of the atlas, metacarpals, prepelvic vertebra, and complete pubic bones of the Dodo, which had before been wanting, as well as additional remains of

Lophopsittacus, *Aphanapteryx*, and other forms already known to have inhabited Mauritius. Besides these there were bones of other birds, the existence of which had not been suspected, and among them of the following, now described as new:—*Strix* (?) *sauzieri*, *Astur alphonsi*, *Butorides mauritanus*, *Plotus nanus*, *Sarcidiornis mauritanus*, and *Anas theodori*, the whole adding materially to the knowledge of the original fauna of Mauritius.

Mr. Oldfield Thomas gave an account of a collection of Mammals from Nyassa-land, transmitted by Mr. H. H. Johnston, under whose directions they had been obtained by Mr. Alexander Whyte.

Dr. Günther read a paper descriptive of a collection of Reptiles and Batrachians from Nyassa-land, likewise transmitted by Mr. Johnston, and containing examples of several remarkable new species, amongst which were three new Chameleons, proposed to be called *Chamaleon isabellinus*, *Rampholeon platyceps*, and *R. brachyurus*.

Mr. R. Lydekker read a memoir on some Zeuglodont and other Cetacean remains from the Tertiaries of the Caucasus.

Mr. Martin Jacoby read the descriptions of some new genera and new species of Phytophagous Coleoptera from Madagascar.

Nov. 15.—DR. A. GUNTHER, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of October, 1892, and called special attention to a very fine male Ostrich, *Struthio camelus*, presented by Her Majesty the Queen, and to a specimen of what appeared to be a new and undescribed Monkey of the genus *Cercopithecus*, obtained by Dr. Moloney at Chindi, on the Lower Zambesi, for which the name *C. stairsi* was proposed. Attention was also called to the receipt of a series of specimens of Mammals, Birds, and Reptiles, brought by Mr. Frank Finn, on his recent return from a zoological expedition to Zanzibar, and received from several correspondents of the Society at Zanzibar and Mombasa.

The Secretary exhibited (on behalf of Mr. T. Ground) a specimen of the Siberian Pectoral Sandpiper, *Tringa acuminata*, killed in Norfolk.

Mr. G. A. Boulenger read a paper describing the remains of an extinct gigantic Tortoise from Madagascar, *Testudo grandidieri*, Vaill., based on specimens obtained in caves in South-west Madagascar by Mr. Last, and transmitted to the British Museum. The species was stated to be most nearly allied to *Testudo gigantea* of the Aldabra Islands.

Mr. W. Bateson and Mr. H. H. Brindley read a paper giving the statistical results of measurements of the horns of certain beetles and of the forcipes of the male Earwig. It appeared that in some of these cases the males form two groups, "high" and "low"; the moderately high and the moderately low being more frequent than the mean form in the same locality. It was pointed out that this result was not consistent with the hypothesis of fortuitous variation about one mean form.

A communication was read from Mr. O. Thomas, containing the description of a new Monkey of the genus *Semnopithecus* from Northern Borneo, which he proposed to call *S. everetti*, after Mr. A. Everett, its discoverer.

Mr. G. A. Boulenger read a description of a Blennioid fish from Kamtschatka belonging to a new generic form, and proposed to be called *Blenniophidium petropauli*. The specimen had been obtained in the harbour of Petropaulovski by Sir George Baden Powell, M.P., in September, 1891.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

November 2, 1892. — FREDERICK DUCANE GODMAN, Esq., F.R.S., President, in the chair.

Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year.

Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar* var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England.

Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphæna pronuba*, taken at Swansea by Mr. W. Holland.

Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth.

Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair taken at Scarborough. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes.

The Rev. J. Seymour St. John exhibited a monstrosity of *Abraxas grossulariata*, and a specimen of *Taniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens.

Mr. E. B. Poulton exhibited two series of imagos of *Gnophos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light.

Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported

it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than in those which had spun up on the leaves, with numerous dark spots and lines on them.

Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the specimens of the first brood was remarkable in having the under side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine.

Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus*, bred from ova laid by a female taken in the New Forest in July last.

Mr. F. D. Godman exhibited a specimen of *Amphonyx medon*, Cr., received from Jalapa, Mexico, having a pouch-like excrescence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes and Mr. Poulton commented on it.

Mr. C. J. Gahan communicated a paper entitled "Additions to the Longicornia of Mexico and Central America, with notes on some previously recorded species."

Mr. W. L. Distant communicated a paper entitled "Contributions to a knowledge of the Homopterous family Fulgoridæ."

Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern) entitled "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon."

Mr. H. J. Elwes and Mr. J. Edwards read a paper, also illustrated by the oxy-hydrogen lantern, entitled "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he attached great importance to the genitalia as structural characters in determining species, and he believed that he could name almost any species of European Trichoptera simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of Hesperidæ, with the view of considering their value in distinguishing species, but at present he had not matured his observations.

Mr. S. H. Scudder communicated a paper entitled "New light on the formation of the abdominal pouch in *Parnassius*." Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. Mr. Jenner Weir remarked that a similar abdominal pouch was to be found in the genus *Acraea*; and Mr. Hampson referred to a male and female of *Parnassius* in Mr. Leech's collection, in which the pouch had come away from the female and was adhering to the male organs.—H. GOSS & W. W. FOWLER, *Hon. Secretaries*.

NOTICES OF NEW BOOKS.

A Vertebrate Fauna of Lakeland: including Cumberland and Westmorland, with Lancashire north of the Sands. By Rev. H. A. MACPHERSON, M.A. With a Preface by R. S. FERGUSON, F.S.A. 8vo, pp. i—civ, 1—552, with Map and Illustrations. Edinburgh: David Douglas. 1892.

THE Preface by Mr. Ferguson and the coloured map appended to this volume furnish the reader with a good idea of the faunal area of which it treats. It would be difficult to convey an adequate notion of the variety and extent of the contents without writing at considerable length; but we may attempt a brief notice of the more salient features of the work.

The writer of the Preface strikes a key-note when he says that modern changes must have greatly affected the fauna of Lakeland. Up to the end nearly of the last century thousands of acres in Lakeland were lying waste in open common. Enclosure Acts were obtained, and between 1780 and 1820 thousands of acres of heathy hill and rushy swamp were enclosed, and converted into cultivated fields and verdant meadows. Many tarns, such as Tarn Wadling, Gibb Tarn, &c., have been drained, and the corn now waves in rich profusion where fish once swam. Large areas long ago denuded of their ancient scrub have been replanted.

A consideration of these facts has naturally prompted an enquiry as to the former condition of the country, and an examination of the records, both published and unpublished, has revealed to the discriminating eye of our author a mass of most interesting material for a natural history of Lakeland, which in the present volume he has endeavoured to reduce to method and order. The task can have been no light one, for it embraces a considerable variety of subjects.

Amongst the introductory chapters is one on the naturalists of Lakeland. Here we find the names of Dr. Robinson, who wrote "An Essay towards a Natural History of Westmorland and Cumberland," in 1709;* James Clarke, the author of a Survey of the Lakes (1787); Richardson, who wrote a paper on the Fauna of

* Under the title "A neglected Essay on Natural History," a review of Dr. Robinson's work appeared in 'The Field,' 26th April, 1879.

Ulleswater and a catalogue of Cumberland plants for Hutchinson's 'History of Cumberland' (1794—97); John Gough, of Kendal, and his son Thomas; Dr. John Heysham, of Carlisle, the author of a Catalogue of Cumberland Animals (1796—97), and his son Thomas Coulthard Heysham, whose names are well known to ornithologists in connection with observations on certain north-country birds.*

In the next chapter we have an account of the extinct animals of Lakeland—the Wolf, the Bear, the Wild Boar, the Red-deer and the Beaver, of which last-named species the remains (so far as Westmorland is concerned) have been found but in one locality, namely, in some alluvium in the bottom of the Ressedale Valley, near Clouds.

“The destruction of wild animals,” “Variation of colour in animals,” “Bird-fowling” and “Introduced Species,” are the titles of the chapters which follow, and which are in turn succeeded by a “Review of the Fauna of Lakeland,” which introduces us to the general body of the work. Here the Mammals, Birds, Reptiles, and Fishes are dealt with in turn, and at considerable length.

The birds, as might be expected, receive the fullest share of attention, not only on account of the large number of species, but because this class of Vertebrates has been more generally and closely studied. Amongst these are two species of which coloured figures are given—namely, the Isabelline Wheatear, *Saxicola isabellina* (Rüppell), and the Frigate Petrel, *Pelagodroma marina* (Latham), both unique of their kind—as accidental visitors to England. The latter, however, having been found dead, and washed up by the tide on Walney Island, may in this way have come from a considerable distance, so that it appears to be rather straining a point to include it as a visitor to a country which in all probability it never saw. However this may be, it is satisfactory to have a good figure of it, with such an account of the species as is here furnished. The bird seems to have a wide range in the southern hemisphere, and it is thought may possibly breed in the Canary Islands.

* T. C. Heysham's copy of Montagu's 'Ornithological Dictionary,' bearing his book-plate, has been on the Editor's book-shelves for the last five-and-twenty years, but contains no annotations.

The other full-page plates are etchings of Gowbarrow Park, the ancestral home of the Red-deer; Levens Deer Park; Eyrie of the Sea Eagle at Buck Craig; Monkhill Lough, a haunt of Wild Swans; and other equally interesting scenes. Besides these sundry smaller woodcuts are scattered throughout the text. It would be difficult to find a more fascinating book for naturalists, or one which, in our opinion, has been more conscientiously and ably written.

The Birds of Devon. By W. S. M. D'URBAN, F.L.S., F.E.S., and the Rev. MURRAY A. MATHEW, M.A., F.L.S. 8vo, pp.i—lxxxvii, 1—460. Illustrated by coloured plates, photographs, and maps. London: R. H. Porter. 1892.

DEVONSHIRE has been the home of many excellent ornithologists each of whom has contributed in turn to its bird-lore. The literature, however, is very scattered and of very unequal merit. Only last year we noticed a book on the birds of this county, by Mr. Pidsley (*Zool.* 1891, p. 232), of which we were reluctantly compelled to express an unfavorable opinion, the work being considerably below the standard of excellence which is set up at the present day. This was at once apparent to the authors of the volume now before us, who, having been engaged for the last quarter of a century in collecting materials for such a work, were naturally in a position to form an opinion on the subject. It seemed to them that Mr. Pidsley's attempt was neither extensive enough as regards the field of observation, nor exhaustive enough even so far as it went. For Devonshire forms but the central portion of the south-west peninsula, and the migrations of birds especially can hardly be understood unless the adjoining counties to the east and west be considered with it.

Even the opposite portions of the county itself present differences in their summer migrants, in the classes of the rare accidental visitors which either may expect to receive, and in the shore birds which winter in the south while they desert the northern estuaries. In a large county like Devonshire, with so varied a surface, some species are common on one side though rare on the other, and in one portion appear in winter and in another in summer. Such differences can only be made apparent by carefully recording the dates of occurrence as well as the localities.

“ Some species, such as the Purple Sandpiper and Black Redstart, are common in the south-western part of Devon, and are rare in the eastern portion. Others, like the Common Redstart, Turtle Dove and Sanderling, are more frequently met with in eastern Devon than in the south and west. Again, the Pied Flycatcher, Twite and Wood Sandpiper are almost unknown in the south, but are not unfrequent in the north of the county; and some, as the Oystercatcher and Puffin, are far more plentiful on the north coast than on the south; whilst, on the other hand, Geese, some kinds of Ducks, and Terns, appear more frequently on the south coast than in the northern part of Devon.

“ About thirty-four species, mostly accidental wanderers from the continent of Europe, have occurred in South Devon, which have not yet been recorded from North Devon, and eight species, mostly American, have been observed in the northern part of the county which have not been procured in the south.

“ Some species come in flights at more or less distant intervals of time, such as the Crossbill, Sand Grouse, Quail, Bittern, Snowy Owl, Rough-legged Buzzard, Grey Phalarope, Skuas, &c., their occurrence at other times being rare; so that it is obviously important that the dates of such events should be carefully recorded.”

These and other considerations have led the authors of the present volume to take a high standpoint in their survey of the county avifauna, with the result that the subject has been treated with a fulness and thoroughness which is highly satisfactory.

The Introduction, which extends to over eighty pages, deals first with the geographical position and physical aspect of Devon, including detailed descriptions of Dartmoor, the South Hams and Slapton Ley, East Devon, North Devon with the estuaries of the Taw and Torridge, Braunton Burrows and the cliffs, and Lundy Island, of which a nice photograph is given, showing the rocks covered with sea-fowl as in the nesting season. Next we have a section on “ changes in the county ornithology,” in which some curious facts are stated as to the increase of some species, and the disappearance, or diminution in numbers, of others. In a succeeding section on “ the faunistic position of species,” we learn that 292 species are included in the Devonshire ornithology, and that no less than 29 have been excluded in consequence of their occurrence having been incorrectly recorded, or because it rested upon insufficient evidence. One hundred and fourteen breed annually in the county, namely, 84 residents and 30 summer visitors; while half-a-dozen winter migrant

and eight casual visitors have been found nesting in isolated instances.

Under the heading "Collections of Birds in Devonshire," we have an account of all that are noteworthy both in public institutions and private collections, as well as four others, which though originally found in Devonshire are not now in the county, but are preserved elsewhere. These are—the collection of Col. Montagu in the British Museum, Dr. Woodford's collection in Taunton Castle Museum, Mr. Horner's collection in the Frome Literary Institution, and Mr. Murray Mathew's collection at Buckland Dinham.

Perhaps the most interesting section of the "Introduction" is that which is headed "Lines of Migration," and which is illustrated by two maps, one showing the direction from which the principal streams of birds arrive from the European continent in autumn; the other showing the remarkable manner in which the migratory streams cross each other, but all concentrating on the south-western peninsular of England. Thus we get an explanation of how northern and southern races of the same species reach us. We have large and small Wheatears, Crossbills, Ring Plovers, Dunlins, &c., which no doubt come from different countries, it being now well known that birds of wide distribution are subject to great variation of form.

The Introduction concludes with a list of books and articles on Devonshire ornithology which have been consulted by the writers of the present work. These are twenty-eight in number, commencing with an excursion to Dartmoor in 1795, and ending with Mr. Pidsley's volume published only last year.

With the mass of information contained in the body of the work (pp. 1—442) we have not space to deal critically. It must suffice to observe that under the English name of each species, followed by its scientific designation and the provincial or local names, where such exist, we find an exact indication of its position in the county ornis, and, in the case of the rarer species, a summary of the records relating to its occurrence.

The nomenclature and arrangement which have been followed are those adopted by the Committee of the British Ornithologists' Union in the list of British birds known as the 'Ibis List,' published in 1883. Although the authors have thought it desirable to follow this list, they state (Introd. p. xiv) that "it

can only be regarded as provisional, and it is to be hoped it will soon undergo revision, as neither the position nor the names of the species are always to be considered as satisfactory." In this we fully agree.

In regard to illustrations there are four coloured plates, by Keulemans, of the Black Redstart, Montagu's Harrier, Rough-legged Buzzard, and Black-headed Gull; a coloured frontispiece of Yes Tor, the home of the Ring Ouzel; and photographs of the birds at Lundy, the Start Lighthouse, Slapton Ley, and the Eddystone. These, with a good map of the county, and the maps illustrating migration already referred to, complete a volume which must for long remain the best on the subject of which it treats.

The Fauna and Flora of Gloucestershire. By C. A. WITCHELL and W. B. STRUGNELL. Royal 8vo, pp. i—xxiv, 1—300. Stroud: G. H. James. 1892.

IN regard to its natural history Gloucestershire seems to have been somewhat neglected. We do not call to mind much that has been published on the subject beyond Knapp's 'Journal of a Naturalist,' which we read in our school-days; Nicholls' 'Account of the Forest of Dean'; and that apocryphal work 'The Naturalist in Siluria,' which was reviewed in these pages not long since (Zool. 1889, p. 195). The last-named, by the way, includes some remarks on White Stoats in the parish of Flaxley, on the depredations of Squirrels, and Martens in the Forest of Dean,—items of Gloucestershire Zoology to which no allusion is made in the volume before us.

Mr. Witchell, therefore, has had but few predecessors to aid his undertaking, and has had to rely mainly on his own powers of observation, and those of his contributors, of whom a goodly list is given. It looks well, in the interest of natural history, that more than fifty observers should be found able and willing to contribute information for a general work on the fauna and flora of their county, and the result of their combined observations is worthy of commendation, though we should much have preferred a careful digest of the whole in preference to the series of paragraphs which are followed by the initials of the contributors, and which give the work a fragmentary and incomplete appearance.

Putting aside the *manner* of the book, and coming to the *matter*, it is evident that Gloucestershire has many attractions for a naturalist. The surface of the county may be divided into four regions :—

“ First, we have in the west of the Severn a forest region, including the Forest of Dean coal-field and the old Silurian rocks of May Hill. The second region resembles this, but lies on the other side of the Severn : it includes the Bristol coal-field, with the Silurian rocks of Tortworth. The flat lands round the Severn form the well-known Severn Valley, and constitute the third region ; while the fourth consists of the oolite rocks which at the east of the county form a well-marked escarpment, with an old table-land on the top, sloping gently to the east.”

It is obvious, therefore, that such varied physical aspects favour the growth and development of a varied flora and fauna.

With the flora we have no concern, since it comes not within the scope of a Journal devoted to zoology ; but of the fauna we might have a good deal to say did space permit. The divisions of the subject are nine in number, *viz.*, Mammalia, Aves, Reptilia and Amphibia, Pisces, Crustacea, Aquatic and Terrestrial Mollusca, Heterogyna, Aculeate Hymenoptera, and Macro-Lepidoptera.

Amongst the Mammalia the most interesting are the Whiskered Bat (*V. mystacinus*), stated to be very common at Keynsham and towards Bath, and the Greater Horse-shoe Bat (*R. ferrum-equinum*), reported as fairly abundant in the Bristol district, and more so on the Somersetshire side of the Avon.

In quoting, apparently from Gilbert White, the statement (pp. 4, 5) that the Hedgehog is fond of the plantain, the root of which it bites off without injury to the leaves, Mr. Witchell is apparently not aware that this charge has been disproved, and that the defaulter is not the Hedgehog, but a night-feeding caterpillar.

The paragraphs which affirm both the inability and the ability of the Hedgehog to climb (pp. 3 and 5) should have been fused so as to remove the apparent inconsistency of the two statements.

It is remarked (p. 10) that the list of enemies of the Common Shrew “ probably includes Mice and the Mole.” This has been said before (*cf.* Bell, 2nd ed., p. 144), but we are not aware that there is any evidence on record to support the charge.

It is satisfactory to learn that both the Badger and the Otte

still hold their own in Gloucestershire in spite of the persecution to which they are subjected whenever an opportunity occurs. The Polecat also is still found occasionally in some parts of the county, though on some estates, as on that of Lord Sherborne, it is reported to be now extinct.

Ten years ago (1882) a Marten was shot in the Forest of Dean, and about the same time one was taken alive at Berkeley, and kept for some weeks in captivity, but proved to be wild, restless, and untameable. This does not happen, however, if the animal be taken young.

That the Wild Cat was at one time a native of Gloucestershire is most probable. The name 'Catswood' occurs here and there in the county, and it is on record that Thomas de Berkeley, in Henry the First's time, had liberty by royal grant to hunt the Wild Cat, amongst other animals, in Kingswood Chase. It must now, however, be regarded, so far as England is concerned, as one of the wild animals which have become extinct within historic times.

The Black Rat is stated to be still common in some of the Bristol warehouses, and in 1872 a score or so were killed around a rick at Brownhill, near Stroud.

Under the head of Red Deer Mr. Witchell writes (p. 39) :—

“Deer seem to have been occasionally employed, when tame, for draught purposes, for, after the death of King Edward II., Abbot Thokey went, attended by his brethren, solemnly robed and accompanied by a procession from the city of Gloucester, and claimed the body for burial, which, with the observance of all possible respect, he conveyed in his own chariot *drawn by stags* to the Abbey, where it was buried with becoming solemnity.”

This passage appears to be quoted from Fisher's 'History of Berkeley,' 1864, and in our opinion is founded entirely upon a misconception. We have no doubt that the *stags* in this case were not deer, but oxen. The word *Stag* (Icelandic *steggr*) really applies to the male of several animals, and in some parts of the country is especially bestowed upon a castrated taurine male from two to four years old. In this sense it is synonymous with *steer* (A. S. *steor*, Icel. *thior*). There would be nothing remarkable in the fact that the body of the king was conveyed upon a chariot drawn by oxen, which would be chosen for that purpose, in preference to horses, on account of their slow and solemn gait.

Turning now to the section on "Birds," we observe, *en passant*, some collected observations on the occurrence of the Nightingale in Gloucestershire which are useful, coupled with the statement that one was kept in a cage for eleven years. It was supplied daily with insect food, yolk of egg, and crushed hempseed. It sang in the winter and moulted in spring.

Amongst the rarer small birds which have been met with in Gloucestershire are the Yellow-browed Warbler (p. 51), Alpine Accentor (p. 54), Bearded Tit (p. 55), Waxwing (p. 61), Ortolan (p. 71), Red-winged Starling (p. 71), and Rose-coloured Pastor (p. 72).

We cannot agree with Mr. Witchell in his scheme of classification which separates the Swifts from the Swallows by interposing the Finches, Buntings, Crows, and Larks. The researches of Parker, Garrod, and Shufeldt have shown this to be untenable.

Dr. Altum's observations on the food of the Tawny Owl are extracted (p. 85) from an article in the 'Nineteenth Century' (1892) as if they were quite new. Mr. Witchell ought to be aware that they were communicated to the German Ornithologists' Society thirty years ago, and are quoted in the first volume of the fourth edition of Yarrell's 'British Birds,' which appeared in 1871. Mr. Herbert Playne's account of a Tawny Owl which he brought up, and which became tame enough to come when called, to be allowed her liberty at night when she went mousing, and returned through a window left purposely open for her, is extremely interesting:—

"When I took her back again to Oxford (he says), after Easter, 1890, she was able to fly; and at dusk she would dart out of my window, but by morning was back in the room. Sometimes she would stay away for a day or two, but always returned very hungry. . . . One morning in May I was awakened by a tremendous row in my study: when I opened the door, what was my surprise to see another Owl sitting on the table! He at once flew out of the window, but my Owl stayed in the room. The wild bird came nearly every evening, and used to call outside my window. Once again he came in, and about 4 o'clock both birds went out into the garden. The Jackdaws were much disturbed, and kept flying and chattering round them. No less than twenty-two Jackdaws sat gazing in a row on the chapel roof. The Owls took no notice of them; but at last the stranger, seeing me, flew off pursued by the Jackdaws."

It is to be hoped that residents in the county of Gloucester and elsewhere will profit by the information they will find in this

volume on the subject of owls and hawks, and will learn to distinguish and protect those which are really useful to man. On the subject of hawks Mr. Witchell has been fortunate in enlisting the aid of Major Fisher, of Stroud, one of the best falconers of modern times. An observation from his pen (p. 99) suggests a very brief comment. Writing of Merlins "flying at hack," he says, "*hack* is a word of uncertain derivation, and in falconers' language means the keeping at liberty of any hawk that will come to feed when so at large—for a time." In all probability the term *at hack* is a corruption of the French *au taquet*; *voler au taquet* meaning to fly to the chopping-board on which the hawks' meat was cut up and presented to them.

But we must pass on to other sections of the Fauna, or terminate our remarks abruptly. Pages 124–148 are devoted to a consideration of the Reptilia and Batrachia found in Gloucestershire, amongst which the most noteworthy species perhaps is the Palmated Newt (*L. palmatus*). This is stated to be abundant on the hills near Stroud, and in many upland ponds ten times more plentiful than the Smooth Newt, which is locally uncommon.

The late Dr. Day, who resided during the last years of his life at Cheltenham, would have taken a keen interest in the Section on Fishes (pp. 149–166) could he have seen the proof-sheets, and from his store of ichthyological knowledge could doubtless have furnished some useful information on the Gloucestershire species and their distribution.

The account as it stands seems to us somewhat meagre, and considering the extent of coast-line which abuts on the Bristol Channel we should imagine that a great many more species are to be met with than are here mentioned. We note (p. 158) that some few years ago the Grayling was introduced by Lord Coventry into the Windrush, but has not become numerous. To judge by the Report of the Chairman of the Severn Fishery Board, 1892, there must be a good many ardent anglers in the county, for it appears that in 1891 the sum paid for one shilling licences for rod and line amounted to £508 17s.

With respect to the gift of *Lamprey-pies* formerly made to royalty by the Corporation of Gloucester, some curious extracts are supplied (pp. 165, 166) from 'Gloucestershire Notes and Queries,' but we have not space to quote them here.

The Section "Crustacea" contains but a few pages on the

Crayfish, which is abundant in many of the Gloucestershire streams and rivers, though it appears that none have yet been found in the Severn. The author of this chapter, Mr. Edwin Burgh, throws out the suggestion that in these times of agricultural depression, it might be worth while for farmers who have suitable water, to breed Crayfish and send them *viâ* Bristol to the French market, where (as a delicacy) they always command a high price.

The remaining sections of the volume (excluding the Botany) deal with the Mollusca, of which 108 species are catalogued; the Ants of Gloucestershire, concerning which there is a long contribution by the Rev. W. F. White; the Hymenoptera (pp. 196-243); and the Macro-Lepidoptera (pp. 244-259). Few counties can show such a record of good species of butterflies as are to be found in ordinarily favourable seasons in Gloucestershire, and entomologists will find much to interest them in this section of the work.

Mr. Witchell's attempt to bring together in a volume of convenient size as much reliable information as he could collect on the zoology and botany of the county in which he resides, is extremely commendable. It is by no means exhaustive, nor does the author, we imagine, profess it to be so; but it will supply a blank in the list of county faunas and floras, and will, we trust, in a second edition, lead to something still better.

Catalogue of Eastern and Australian Lepidoptera-Heterocera in the Collection of the Oxford University Museum. By Colonel C. SWINHOE, F.L.S., F.Z.S., F.E.S. Part I. Sphingies and Bombyces. 8vo, pp. viii, 324, and 8 coloured plates. Oxford: Clarendon Press. 1892.

A GREAT number of moths were described by the late Francis Walker from the collection of the British Museum, where the types still exist, and may be easily traced; but he also described several hundred species from the collection of the late Mr. Wilson Saunders, who at that time possessed the finest private entomological collection in England. The most important portion of Mr. Saunders' types were those from Sarawak, described by Walker in the 'Journal of the Linnean Society' (vols. vi.-vii.), to which, strangely enough, Col. Swinhoe makes no special allusion in his preface.

Large portions of the Saunders' collection, including the whole of the Lepidoptera-Heterocera, subsequently found a permanent abiding-place in the Oxford Museum, where many of the type-specimens described by Hope, Westwood, Moore, and other entomologists may likewise be found.

In the present work, Col. Swinhoe has given us a catalogue of the Eastern and Australian Lepidoptera in the Oxford Museum, these being the insect faunas in which he is specially interested; and much time and trouble has been given to identifying Walker's types, in addition to which many new species have been described by Col. Swinhoe himself; and upwards of 150 species of Walker's and Swinhoe's are represented on the eight plates.

The limited extent of the present work allows of very full references being given, not only to descriptions, but also to lists of species; and the book concludes with a good index. It will be of great use to lepidopterists, especially those residing abroad, on account of the identifications of Walker's species, which continental entomologists have always shown a disposition to ignore, not because his work as a whole was so unsatisfactory as they supposed, but because they cannot check it by comparison with his types (many of which are still unfigured) without the trouble and expense of a journey to England.

As we have said, the Bornean types are the most important, in the Oxford Museum; but the collection likewise contains many typical specimens from other parts of the world, besides those treated of in the present volume. It is to be hoped that the authorities will not content themselves with completing the present series of volumes on Eastern and Australian moths, but will afterwards publish an equally complete *résumé* of their unfigured types from Africa and America.

Les Coquilles Marines des Côtes de France. Descriptions des familles, genres, et espèces, par ARNAULD LOCARD, Vice-Président de la Société Malacologique de France. Roy. 8vo, pp. 384, avec 348 figures. Paris: Baillièrre et Fils. 1892.

THIS is the third and last volume of a comprehensive work designed to bring together from existing general and local cata-

logues a complete summary of the molluscan fauna of France. The first two volumes appeared with the title 'Prodrome de Malacologie Française et Catalogue général des Mollusques vivants de France,' and dealt respectively with the terrestrial, fresh and brackish-water forms and with the marine mollusca. They contain only the synonymy, however, and the French localities for each species, and give no descriptions. But this deficiency is supplied in the contribution now before us, the volumes being thus inter-dependent. By their aid the author claims that any shell properly belonging to the French molluscan fauna may be identified with certainty and with very little trouble. As regards the illustrations, assuming that all the species in a given genus may be grouped according to their affinities round a certain number of prominent types, the author has supplied figures and descriptions of these, so that the enquirer has only to differentiate the surrounding allied forms by their essential characters. This practical and simple method will no doubt facilitate research; but it would have been much more convenient if the synonymy and the descriptions were in one and the same volume, instead of being separated as they are.

It is, we suppose, hopeless to expect anything like a consensus of opinion in regard to classification, but we should have liked M. Locard's work better if it were more conservative on this point, and if the author were less fond of raising mere varieties to the rank of species, and of changing well-known specific names for no good reason.

We observe that no account is given of the animals inhabiting the shells; the descriptions relate only to the shells themselves; so that while they satisfy the requirements of the mere collector, they disappoint the conchologist who finds more pleasure in examining the structure of the living mollusc and in learning something of its life-history and habits.







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